SEO TOOLS:
Looking at SEO Specialists as a user class

by

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Abstract

SEO TOOLS: LOOKING AT SEO SPECIALISTS AS A USER CLASS

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Search Engine Optimization (SEO) is the practice of designing or updating websites with the goal of garnering top rankings in search engines for a desired set of keywords relevant to the website’s target audience. SEO, a subfield of the multi-billion dollar web marketing industry, is done by SEO specialists who use software tools to streamline processes and automate repetitive tasks, such as data collection. SEO software tools enable SEO specialists to focus on analysis and research rather than menial data entry. While SEO tools are an intrinsic part of performing SEO work, opportunities exist to improve SEO tools and offer an improved experience to SEO specialists.

To understand this, a two-part study was undertaken: a multiple choice and short answer web survey followed by semi-structured follow-up interviews. Results from this research reveal opportunities to improve SEO tools. Opportunities include increased integration of keyword research and SEO reporting functionality, and the inclusion of social metrics and conversion analytics in SEO tools.
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1 Introduction

Some of the most popular websites on the Internet are search engines such as Google and Yahoo (Alexa, 2011). Search engines provide links to information by indexing and organizing billions of web pages. By simply typing a few keywords, a set of relevant web pages are displayed to a searcher. As such, search engines provide marketers the opportunity to reach customers by ensuring their websites are included in the list of results for specific search keywords relevant to their target audience. The process of improving the visibility of a website in search engine results is known as search engine optimization (SEO). At the heart of the SEO process is the identification of keywords relevant to a website’s target audience and building websites that can be found using those keywords.

Introduction to SEO

As a subcategory of both web design and web marketing, SEO requires an interdisciplinary approach to understand how to build “search engine friendly” websites, i.e., websites ranked highly in a search engine’s results. For this to happen, overarching design considerations must be taken into account; such as visual design, web usability, and the support of marketing initiatives – both on the Internet and offline.

SEO consists of four core focuses or phases:

1. keyword research,
2. page optimization,
3. link building, and
4. **monitoring and reporting** (Duermoer, 2011).

**Keyword research** is required to understand what target users are searching for; this research can be accomplished by talking to target users through interviews or focus groups, reviewing keywords competitors use and analyzing historical search statistics for keywords relevant to the target audience (SEOmoz, 2011). This information helps streamline the decision-making process and shape the direction of the next phase of the SEO process, page optimization. Using the information obtained from keyword research, the website is updated through a process called **page optimization**. This includes updates to a page’s content, meta tags (such as the page title), and HTML code. The goal is to improve the website’s ranking in search engines for keywords identified during keyword research. Page optimization only updates the target website itself; however, additional updates can be made to third-party websites to help improve the search visibility of the target website, i.e. link building.

Search engines consider the number of links pointing to a website when determining the authority of a website (Brin & Page, 1998). **Link building** is the practice of identifying opportunities for others web sites to create links back to a target website.

After a website is updated and a link building program is established, the focus moves to **monitoring and reporting**. This phase of the SEO process seeks to understand the reactivity of search engines to SEO work (such as page optimization and link building). Monitoring may include reviewing the target website’s ranking in search engines, reviewing the links which point to the target website, and monitoring web traffic and conversion analytics. SEO is an ongoing iterative process without a distinct start and end point. Search engine algorithms and competitor websites do not remain static, thus a
website must be monitored on a continual basis to ensure the website maintains high search visibility. Results from ongoing monitoring and reporting are used to influence the next iteration of keyword research, page optimization and link building.

**SEO tools**

In the field of SEO, software tools are used to streamline the SEO process and automate repetitive tasks such as data collection. This allows SEO specialists to focus on analysis and research rather than data entry. As a SEO specialist, I have experienced first-hand how SEO tools can greatly improve the quality and scalability of SEO work. We classify a SEO tool as a software or web application specifically developed to support SEO specialists in performing SEO work. Other tools, such as the Google AdWords Keyword Tool, were developed for the broader field of other subgroups of web marketing but are used by SEO specialists, are also classified as SEO tools.

Some of the most reliable SEO tools are provided by search engines companies such as Google (Covino, 2011)(Welsh, 2009). These tools give SEO specialists the ability to monitor the keywords and topics used by a target audience to find information on a specific topic. Search engines also provide tools, such as Google and Bing’s webmaster tools, which allow SEO specialists to review how a search engine perceives a target website (Google, 2011). This may include information such as what pages are being indexed, how often the search engine indexes new pages from the website, and suggestions for improving HTML code or meta tags.

In addition to the SEO tools provided by search engines, other software development companies or SEO communities, such as SEOmoz, SEOBBook and Wordtracker, have also developed SEO tools. SEO communities consist of SEO
specialists who interact through forums and blogs. As a result, their tools generally support SEO specialists in specific tasks as they work through the phases of their SEO work. Examples of these tools include keyword brainstorming and review tools used for keyword research (e.g., WordTracker), backlink review tools for link building (e.g., SEOmoz Open Site Explorer) and search engine rank tracking tools used to monitor the effect of SEO work (e.g., WebPosition). A detailed list of SEO tools discussed in this paper is available in Appendix C – Glossary of Selected SEO Tools.

**Thesis statement**

The development of SEO tools has been integral in the advancement of the field of SEO. These tools enable SEO specialists to work more efficiently and perform a thorough analysis of a website’s search visibility. However, current SEO tools typically perform only one specific function in the SEO workflow. Therefore, several SEO tools are required to perform SEO on a single website because no single tool has the capacity to perform the breadth of functionality required by SEO specialists. **By treating SEO specialists as a user class, this thesis examines user preferences and opinions regarding SEO tools in order to determine opportunities for improvement.** By examining SEO specialists’ opinions regarding how integration impacts ease of use, accessibility and efficiency of SEO tools we indeed found opportunities to improve SEO tools.

To accomplish this, we surveyed and interviewed SEO specialists to understand current SEO practices and how integration can improve overall user experience. We used Fishkin’s SEO Industry Surveys (2008; 2010) as a starting point to conduct web surveys with SEO specialists and performed semi-structured follow-up interviews.
Thesis overview

Looking ahead, Chapter 2 discusses the origins of SEO and previous research on the usage of SEO tools by SEO specialists. We wrap up Chapter 2 by presenting our research focus – investigating opportunities for integration in SEO tools. Chapter 3 presents the methodology for conducting our research, i.e., a web survey followed by semi-structured follow-up interviews. We discuss the results of our web survey and semi-structured interviews in Chapter 4, discussing participant views and opinions regarding SEO tools. Finally, in Chapter 5 we discuss the findings from our study and discuss possible avenues for future work.
2 Literature Review

Our research focused on the role of software tools in SEO and opportunities for integration. To this end, this chapter introduces readers to the field of Web Search and Search Marketing, with a focus on SEO. This chapter concludes by discussing the research framework for this topic.

We begin by discussing the origins of search using the World Wide Web (Section 2.1) and explain how the dot-com bubble at the end of the 20th century (Section 2.2) set the stage for SEO as we know it today. Section 2.3 discusses the emergence of Search Marketing and how it led to the beginnings of a new field; SEO (Section 2.4). Section 2.5 looks at the development of SEO tools, and Section 2.6 presents our research focus; investigating opportunities for SEO tool integration. We look at previous work with SEO specialists in Section 2.7 and Section 2.8 outlines selected methods to investigate this topic area.

2.1 Origins of Search using the World Wide Web

In the early 1990s, we saw a major change in the way people accessed information. With the emergence of the World Wide Web and the increasing amount of information, a system was needed to help users find relevant content quickly. This need lead to the creation of web directories categorizing web content and providing links to the content indexed in the directory (Labrou & Finin, 1999). These early web directories, the most notable being Yahoo!, helped users find relevant webpages in specific categories (Wall, 2010).
However, these early web directories were difficult to maintain and keep up-to-date. Information had to be categorized and manually added to the directory by content experts and/or editors. Before a website could be added to a specific directory, it had to be reviewed and approved by a directory/content editor; this was a very inefficient process. Also, website owners were required to submit their website to the directory in order for them to be indexed, adding another layer of complexity in bringing information to a user. A more automated system was needed to make it easier for web content to be indexed, which lead to the emergence of content-crawling search engines.

The first modern search engines as we would call them today appeared during the mid-1990s with the goal of automatically indexing the ever growing web (Wall, 2010). The search engine, WebCrawler, developed in 1994 was designed to visit webpages on the Internet, download the webpage's content and index it for later search through a web-based interface (Pinkerton, 2000). This methodology paved the way for the development of a number of full-text search engines such as Excite, Infoseek, the Inktomi engine and AltaVista which all adopted similar methods for retrieving content and allowing users to search it (Wall, 2010). In 1998, Google revolutionized the world of web searching by developing a powerful ranking scheme known as PageRank, which looked at the links pointing to a subject website in order to determine a quality score (i.e., a PageRank) (Brin & Page, 1998). Google used a web crawler to scan and index web pages and coupled this with their quality score algorithm to display high quality websites in search results. By crawling and indexing the web’s content and determining a quality score, Google’s search results became more likely to satisfy the user’s search query. This basic
methodology was adopted by most other search engines, and remains at the core of today's most popular search engines (Wall, 2010).

2.2 The dot-com bubble's effect on search engines

The 1990s ushered in a decade full of technological innovation, with one of the most important being the emergence of the World Wide Web. As the 1990s drew to a close, the stock market crashed as the ‘dot-com bubble’ burst, leading to a recession and the downfall of many technology companies. Search engines and web directories like Lycos, Alta Vista and Excite thrived during the 1990s, but were unable to compete with large search engines of this period, such as Google and Yahoo!, after the tech crash of 2000 (RazorFish, 2009). This set the stage for the remaining search engine giants to compete for search engine supremacy during the early 2000s. The decade began with Google leading the pack in search technology. In 2000-2003, Yahoo! adopted Google's search algorithm for displaying search results (RazorFish, 2009). It was during this period that Google became the clear leader in the search engine market share. Figure 2.1 shows global search market share between March 2001 and March 2004.
Figure 2.1 shows that in 2001, under 15% of web searches were performed by Google, but by 2004 they were the clear market leader with over 40% of searches. Yahoo! stopped serving search results using Google's technology in 2003 after developing their own search algorithms which followed the same path which Google blazed with its PageRank algorithm (Sullivan, 2004). By 2004, Google and Yahoo! employed very similar search technology and when combined, accounted for nearly 70% of the global search market share (Sullivan, 2004). With only a handful of successful search engines utilizing similar indexing and ranking algorithms, this lead to the emergence of search engine marketing.

2.3 The emergence of search engine marketing

As search engines improved their indexing and ranking algorithms, searchers began to depend on search engines to provide accurate, high-quality results on the Search Engine Results Page (SERP) (Nielsen & Pernice, 2010). On a SERP there are both organic and paid search results, as shown in Figure 2.3. Each group of results can have several unique results associated with it; typically 10 organic search results and anywhere from 0 to 10
paid search results per page. With so many results displayed to the user it is clear that we need to understand how users review search results and what encourages them to visit a particular website on a SERP. In a study by Nielsen and Pernice (2009) using eye tracking technology, it was shown that people are more inclined to look at and click on results/links listed at the top of a SERP, regardless of whether the results are natural search rankings or sponsored results (Nielsen & Pernice, 2010). The results from this study corroborate previous eye tracking research showing users scan web pages in an “F pattern”, i.e., scanning the page in horizontal lines, moving vertically down the page from top to bottom, as illustrated in Figure 2.2 (Nielsen, 2006).

![Figure 2.2 - Eye tracking heat map for search engine results (Nielsen, 2006)](image)

In 2006, a blog post by Boykin showed the importance of rank position in a SERP (Boykin, 2006). From a one month sample of AOL search engine data, (Table 2.1), the number of clicks a website received was analyzed as by the position it ranks at, with Rank 1 being at the top of the SERP and Rank 10 being at the bottom of the SERP. Over
40% of web pages visited were ranked number 1 in the SERP, nearly four times the click volume as Rank 2. Only 12% of clicks were for the Rank 2 result and this drop off continues through Ranks 3-9. This decrease in the number of clicks directly correlated with the ranking of the result, illustrating the importance of SERP ranking on the frequency of clicks. Both Nielsen’s eye tracking research (Nielsen, 2006) (Nielsen & Pernice, 2010) and Boykin’s AOL click data (Boykin, 2006) show searchers are more likely to look at the highest ranked results, and are thus more likely to visit these items. Additionally, the most prominent results shown by search engines are the web pages it considers to be the best match for the search term based on the algorithm the search engine employs. As such, it has become extremely important for webmasters to develop webpages with content that ensures search engines display their webpages at the top of a SERP. To do this, marketers and webmasters developed methods to improve their webpages' position in search engines using SEO techniques to increase web traffic from a search engine (SEOmoz, 2011).

Figure 2.3 - Organic and Sponsored (paid) search results in Google
There are two main types of search engine results displayed on a search engine results page: sponsored (AKA paid search) and organic, as shown in Figure 2.3. Organic search engine results are unpaid listings based on the perceived relevance of a page to the user's search terms, as well as the quality of the page itself. Organic search engine optimization aims to increase a website's position within organic search results for a selected set of keywords by making changes to a website in order to improve its score and visibility in a search engine (Drèze & Zufryden, 2004).

Paid search results are subset of search engine results where advertisers pay to place a short advertisement in a “Sponsored Links” section of a SERP, as shown in Figure 2.3. Paid search results are the cornerstone of a search engine's revenue model. In the first 6 months of 2009, paid search generated over $5 billion in revenue for search engines and represented almost half of all the Internet advertising revenue (Dignan, 2009). Search engines like Google, Yahoo! and Bing employ a cost-per-click (CPC) bidding model, where advertisers can bid on how much they are willing to pay for each click their sponsored result receives for each keyword they wish to target (Rutz & Bucklin, 2007). A higher bid places the sponsored result at a higher position on the SERP (Google AdWords, 2011). Allowing marketers to pay for sponsored search results generates revenue for search engines, some of which allows search engines to develop organic search; the primary method of finding information online (Jansen, 2007).

2.4 Introduction to Search Engine Optimization (SEO)

The biggest difference between paid search and organic search is that sponsored results are influenced by a CPC bidding model. The nature of the CPC bidding model allows advertisers to almost instantly improve the display position for their sponsored result by
increasing the amount of money they are willing to spend for each click. By spending enough money, any advertiser can almost always ensure their advertisement is displayed at the top of a sponsored result set. Organic search, on the other hand, does not use a bidding model (or any monetary model) to determine which results are shown to a searcher. Organic search results are displayed using an algorithm based on a website’s quality and cannot be influenced by money. For the scope of our research we did not look at paid search. Additionally, working as an SEO specialist during the last 3 years, this researcher observed that many SEO specialists do not work with paid search and focus all their efforts on SEO.

To improve a website’s ranking in organic search results, there are four key areas to consider:

1. **Keyword research** - choosing keywords to target;

2. **Page optimization** – updating websites

3. **Link building** (Duermeyer, 2011).

4. **Monitoring and reporting**

Once a website has been optimized for search engines, the focus moves toward monitoring and reporting in order to determine the effectiveness of the optimization work. The overarching goal of SEO is to improve a website’s exposure in search engines, commonly referred to as "search visibility". Outputs from reporting and monitoring track search visibility and act as inputs for the next iteration of keyword research, page optimization and link building work, as shown in the SEO phase diagram (Figure 2.4).
The following is a short discussion of each of the four key areas of optimizing for organic search results:

1. **Keyword Research**

Keyword research is the process of determining words and phrases that may be worthwhile to optimize for organic search (Duermeyer, 2011). The goal of keyword research is to find keywords and phrases used by a website's target audience when performing web searches (Duermeyer, 2011). Keyword research is performed by taking a small selection of keywords which are highly relevant to the target website then expanding it by brainstorming, analyzing existing site content and using software tools to generate additional keyword suggestions (SEOMoz, 2011). Web based keyword analytic tools, such as the Google AdWords Keyword Tool, provide accurate metrics surrounding searches performed for each keyword on a monthly basis. This analytic information can help webmasters decide which keywords should be targeted within the website's content.
2. Page Optimization

To reach the target audience through organic search, the keywords discovered during the keyword research phase must be incorporated into a website; this is a process known as on page optimization (Duermyer, 2011). Including keywords in page titles, link anchor text and page content - all of which are indexed by search engines - creates a link between a website and the keywords which its target audience may search for. On top of tailoring a page's content to align with keyword research findings, a variety of technical page optimization best practices can be followed to create websites optimized for search engines (Fishkin, 2009). Websites optimized for search engines must still deliver a positive user experience and something of value to the target audience. Optimizing a website for organic search can drive web traffic to a website; however, if it comes at the expense of the site's readability and user experience and may harm overall conversions. To avoid this, attention should be paid to ensure technical and on page optimization do not harm the website's user experience (Thurow, 2008).

3. Link Building

A core input to many search engine algorithms, such as the PageRank algorithm developed by Brin & Page (1998), is the quantity and quality of hyperlinks (AKA links) pointing to a webpage (Brin & Page, 1998). After a website is optimized for search engines, webmasters can turn their focus to generating inbound links to their website in order to improve its organic search rank. The success of link building is measured by counting the quality and quantity of links acquired through this work. The process of acquiring links which point to a target website or "inbound links", is known as link building (Duermyer, 2011). Link building can be performed using a variety of tactics,
such as engaging in social media activities, submitting a website to relevant online directories, or purchasing a link on a relevant website (Duermyer, 2011) (SEOmoz, 2011). 4. Monitoring & Reporting

After a website is optimized to align with keyword research and a link building strategy has been established, webmasters may monitor the reactivity of search engines to these changes. This process is the reporting and monitoring phase, where webmasters can review the results of their SEO activities through monitoring organic search results and link metrics in relevant search engines (Boggs, 2008). Monitoring inbound links allows webmasters to confirm the effectiveness of their link building programs. To do this, baseline reports are created prior to and after optimization work, in order to examine how website updates or link building impact search visibility. Search engines typically provide methods of reviewing inbound links to a subject website, such as Yahoo's Site Explorer or performing a search in Google for "link:<url>" (Google Webmaster Central, 2007). By reviewing inbound links for a subject website, webmasters can review links pointing to their website, and check whether search engines have indexed the new links. This also allows webmasters to visit other websites which link to their website and ascertain the SEO value of their inbound links (Critchlow, 2009).

The goal of any organic search engine optimization program is to have the target website displayed in organic search results for search phrases that are meaningful to target searchers. In order to determine whether this goal is being achieved, webmasters need accurate information on their website’s ranking in organic search results. Information about these rankings can be gathered through a variety of means, with the most basic form of search engine reporting being done by webmasters themselves.
Webmasters can perform manual spot checks by searching for desired keywords in a search engine and recording their website’s rank in a SERP. As the field of search engine optimization has evolved, software has been developed to aid search engine reporting. The software works by simulating a user's search in search engines and recording the SERP, a process known as "search engine scraping" (Fishkin, 2006). Reviewing a website's rank in search engines for a given set of keywords allows the webmaster to evaluate the website's search visibility. The same set of keywords are reviewed on a regular schedule, often monthly or quarterly and analyzed by comparing the search visibility results to previous results. The effectiveness of SEO work can be evaluated using this method and helps to shape decision making for future SEO work.

SEO is an iterative process in which reporting and monitoring is vital to its success. Continual reporting and monitoring allows webmasters to gain insight which can be used to shape the next iteration of keyword research, page optimization and link building, as shown on the right side of Figure 2.5.
Figure 2.5 illustrates how the typical phases of an SEO program fit into a traditional waterfall software and web design. However, unlike the waterfall methodology, SEO is considered an iterative and ongoing process, which can continue indefinitely after a website's initial launch. Therefore, SEO can be implemented as an add-on for a completed website or included as part of a website's design process. The iterative and interconnected nature of SEO offers many opportunities for integration; the focus of this research looks to identify opportunities for integration.

2.5 SEO software development

SEO tools have been developed to aid webmasters and search engine specialists in many areas of SEO. A selection of SEO tools that span the four phases of SEO can be found in Table 2.2. Some of these software tools have been developed and released by major search engines, such as Google and Yahoo!. In addition, SEO or software development companies such as SEOmoz and WebPosition have created other SEO tools.
### SEO tool type
<table>
<thead>
<tr>
<th>Example uses</th>
<th>Example tools</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Keyword Research</strong></td>
<td>- Keyword search volumes</td>
</tr>
<tr>
<td></td>
<td>- Additional keyword suggestions</td>
</tr>
<tr>
<td></td>
<td>- Competitive analysis</td>
</tr>
<tr>
<td><strong>Page Optimization</strong></td>
<td>- Adhering to SEO best practices for HTML</td>
</tr>
<tr>
<td></td>
<td>- W3C compliance</td>
</tr>
<tr>
<td></td>
<td>- Reviewing the frequency of use for keywords</td>
</tr>
<tr>
<td></td>
<td>- Sitemap creation</td>
</tr>
<tr>
<td><strong>Monitoring and Reporting</strong></td>
<td>- Reviewing search rankings</td>
</tr>
<tr>
<td></td>
<td>- Reviewing inbound links</td>
</tr>
<tr>
<td><strong>Link Building</strong></td>
<td>- Determining the quality of links</td>
</tr>
<tr>
<td></td>
<td>- Finding new link opportunities</td>
</tr>
</tbody>
</table>

Table 2.2 - SEO tools

Keyword research tools, such as WordTracker and Google's AdWords Keyword Tool, provide information about the number of users searching for a set of keywords each month. Keyword research tools often provide additional information, such as historical averages, competitiveness scores and the number of users searching for a keyword in a specific region. In addition, keyword research tools typically provide additional keyword suggestions based on an initial list of keywords. Link analysis tools, such as the SEOMoz Open Site Explorer, can aid in the identification and analysis of a site's inbound links, a competitor's inbound links, or other attractive link opportunities. Tools were created to review page content for subject websites; these tools review the use of headers, page titles, links and other relevant web development best practices. This type of analysis can be performed through tools provided by search engines, such as Google's Website Optimizer or other tools within Google Labs, and through tools developed by third-party developers, such as SEOMoz's SEO Toolbar. This is a common theme in SEO tools, i.e., some tools are offered by search engines and others are offered by third party organizations. However, search engines have the inherent advantage of being able to leverage their query logs in order to provide data to their SEO tools.
As discussed previously, the review of organic search results can be a long and laborious procedure if done manually by a webmaster. SEO reporting and monitoring tools such as WebPosition generate custom reports from scraping search engine rankings, while plug-ins like SEOBook's Rank Checker extension for Firefox can be tailored to extract this information through macro-based actions (Miller, 2008).

Although there are many software options available to webmasters to aid in their SEO work, there is currently no single SEO tool fulfilling all the requirements of webmasters.

In 2008, a study by Spinuzzi (2010) looked at how SEO specialists use software as part of their SEO reporting workflow (Spinuzzi, 2010). This study followed Russell's (2009) writing, activity and genre research (WAGR) methodology, which focused on examining the cyclical nature of report writing (Russell, 2009). To learn more about the reporting practices of the SEO specialists, Russell performed semi-structured interviews.

Through these interviews it was found that some participants discussed BRILLIANCE, a pseudonym for a software platform created by the firm to aid in SEO monitoring and reporting for client websites. These participants typically spent the first two weeks of each month writing progress reports and interacting with clients. By creating their own specialty software, the time and effort required by the SEO specialists to generate the reports was decreased. Spinuzzi (2010) found that participants previously used a variety of macros and spreadsheets to amalgamate data to create monthly reports. Once BRILLIANCE was created, it began to handle much of that work automatically with very limited human intervention. This is the rationale behind the creation of many SEO tools, to automate typically mundane and time-consuming tasks.
Spinuzzi found the BRILLIANCE system was used to build charts, tables and other information included in monthly reports, allowing the SEO specialists to spend more of their time on analysis and building client relationships. While not explicitly probed by Spinuzzi, the high level of adoption and integration of BRILLIANCE into processes and workflows, as discussed by several participants, suggests SEO specialists are able to well articulate software requirements. One participant in Spinuzzi’s study discussed how he and his colleagues often had to seek out new tools (not part of BRILLIANCE) in order to streamline their workflow. After working with these tools, he and other SEO specialists would take it upon themselves to review other tools and bring their findings back to the team (Spinuzzi, 2010). As an SEO specialist since 2008, I have found SEO tool review is a typical part of being an SEO specialist. Many of the blogs, articles and other community-focused content created by SEO specialists focus on reviews or how-to-guides which involve SEO tools (SEOBook, 2010).

SEO specialists who use BRILLIANCE also had an interest in bringing their ideas and beliefs to the requirements gathering process, as doing so would improve many aspects of their daily workflow. The findings from Spinuzzi’s study show how including SEO specialists as participants for SEO tool requirements gathering can enhance user adoption and user satisfaction with the tools developed. His study demonstrates the importance of understanding the unique requirements of SEO specialists and how user needs influence the development of SEO tools.

2.6 Investigating opportunities for SEO tool integration
While the tools discussed in Section 2.5 aid SEO specialists and webmasters in their decision making process, many tools perform only a single function. More specifically,
many SEO tools perform a single function very well but do not consider the iterative nature of the search optimization workflow. By investigating user opinions and preferences and keeping the interconnected nature of organic SEO in mind, it is possible to gain insight into how to develop or improve SEO tools for creating a better overall user experience for SEO specialists. This thesis uncovered how software can be created to better suit the needs of SEO specialists. Furthermore, this thesis examines the interconnected nature of keyword research and SEO reporting and discussed how the integration of SEO tools can be achieved. While future research may include aspects of page optimization and link building, to keep the size of this study manageable, only keyword research and search engine reporting tools were examined. To this end, the next section describes previous research focused on SEO specialists as a user class.

2.7 Previous work with SEO specialists

In order understand SEO specialist opinions of SEO tools, we looked to previous work focusing on SEO specialists as software users. At the time of writing there was limited information available on this topic but two studies were particularly relevant to this research. Section 2.7.1 examines the 2008 SEOmoz SEO Industry Survey, a web survey intended to learn about SEO specialists demographics and SEO tool use. Upon the success of the 2008 survey, SEOmoz (a company who creates SEO tools) undertook a similar follow-up survey in 2010, which is discussed in Section 2.7.2. In Section 2.7.3 we discuss how the methodology and findings from the 2008 and 2010 SEOmoz surveys can be included in our research.
2.7.1 2008 SEOMoz SEO Industry Survey

In 2008, the SEO community and SEO tool maker SEOMoz, operated by Rand Fishkin, conducted a survey of web marketing professionals, with each survey employing a web survey to poll participants (Fishkin, 2008). Fishkin’s survey investigated trends in the search marketing industry, with special focus being given to SEOs. This study reached out to over 3000 web marketing professionals whose focus was SEO, paid search marketing, and social media marketing (Fishkin, 2008). The study examined participant demographic and preferences for SEO Tools and tactics.

![Keyword Tool Adoption by Company Type](image)

**Figure 2.6 - Keyword research software usage by company type (Fishkin, 2008)**

SEOMoz’s study examined the use of popular keyword research tools broken down by company and job type. Wordtracker was by far the most used keyword tool by all groups followed by Keyword Discovery (Figure 2.6). One of the most interesting findings from this data is the number of SEO specialists who did not use any keyword research software
at all. Over 20% of SEO specialists who worked outside of a dedicated SEM agency didn’t use any keyword research tools at all (Figure 2.6). This data shows that in 2008 many SEO specialists worked without the aid of keyword research tools, especially those who worked outside of a dedicated SEM agency.

Additionally, the results from Figure 2.6 show SEM agencies were among the greatest users of nearly all keyword research usage tools, suggesting SEP professionals who work for SEM agencies are the most tool-savvy of the 5 company types.

![Figure 2.7 - How I Learned SEO by Company Type (Fishkin, 2008)](image)

The researchers found respondents who worked as part of an agency or company were more likely to receive on-site SEO training (Figure 2.7). Those working in SEM agencies were most likely to receive on-site training (Figure 2.7) and also were also the least likely to use no software tools (Figure 2.6). This suggests keyword research tools were taught as part of the in-house training done through the organization. As a result, SEO specialists
who work for SEM agencies are most likely to be on 'the cutting edge' of SEO tools. With the knowledge that agencies are most likely to be on the cutting edge of SEO tools, we ensured that our study included SEO specialists working as part of an agency.

2.7.2 2010 SEOMoz SEO Industry Survey

Upon the success of the 2008 survey, SEOMoz commissioned a similar study in 2010 and surveyed over 10,000 search marketing professionals (Fishkin & Critchlow, 2010). The survey was very similar to the 2008 survey and examined demographic information along with participant preferences for SEO tools and tactics. While the 2008 study asked participant about keyword research tools only, the 2010 study looked at SEO tools in general, breaking them down by paid and free SEO tools. The researchers separated the examination of paid and free tools into two separate questions because many SEO tools, such as SEOMoz Tools and SEOBook Tools, offer both free and paid tools.
The researchers asked participants which free SEO tools they used in the prior 12 months (Figure 2.8). They found that the percentage of respondents who used no SEO tools in the last 12 months dropped significantly compared to the 2008 study. Additionally, three of the five most used SEO tools were provided by the major search engines (Google, Bing and Yahoo!). Two of the five most used SEO tools were provided by SEO community-focused websites (SEOMoz and SEOBBook), underscoring the importance of SEO communities supporting SEO specialists.

Only 5% of respondents used no SEO tools, down from nearly 25% in the 2008 study, suggesting that SEO tools have become an intrinsic part of the SEO workflow. On top of an increased use of SEO tools, Figure 2.8 shows participants are more likely to use more software tools compared to results from the 2008 study. This opens the door to integrating SEO tools with one another. The underlying hypothesis is that SEO workflow
can be improved by integrating functionality from single-function SEO tools into a cohesive SEO tool. As a result, our research investigated the shortcomings or gaps in existing SEO tools with the view of overcoming these deficiencies through software integration. To this end, we focused on investigating three key areas:

1) Establishing baseline information regarding the importance of SEO tools and participant preferences regarding SEO tools
2) Determining shortcomings or areas for improvement in SEO tools
3) Identifying possible solutions to resolve SEO tool shortcomings and/or provide an improved user experience.

2.7.3 Reaching SEO Specialists
The successes of the 2008 and 2010 SEOmoz studies provided a general framework for reaching our study's target audience. SEO specialists are a geographically disparate group. In addition, the nature of online marketing allows SEO services to be performed by individuals who can be thousands of miles away from a client. Participants anywhere in the world can easily access web surveys at a time of their choosing, and the survey can be crafted for quick completion and a relatively low cognitive load. Like many professionals, SEO specialists highly value their time.

2.8 Methods Selected
Previous work by SEOmoz in their 2008 and 2010 SEO industry surveys showed how search engine professionals can be reached effectively through a web survey. As SEO specialists are geographically disparate, a short self-serve web survey addressed concerns related to both disparate geographical locations and the drain on participant time. To complement this work, we followed the survey with interviews of selected participants to
further explore topics. The combination of a web survey and short semi-structured follow-up interviews increased the validity of the results and gained further insight into participants’ opinions regarding SEO tools and their integration. Details of the methodology are discussed in the next chapter.
3 Methodology

This chapter outlines the two-part methodology used in this study:

1) Web survey

2) Semi-structured interviews

Section 3.1 describes the structure of the web survey. This is followed by Section 3.2 describing the validation of the web survey questions. Sections 3.3 and 3.4 discuss the incentive offered to participants and the call for participants. The final section, Section 3.5, describes the method for the follow-up interviews.

3.1 Web survey

As part of our research method, a 22-question survey investigated the opinions and preferences of SEO specialists regarding SEO software they use as part of their workflow. The survey design was based on from SEOmoz's (2008 & 2010) search marketing studies as well as Zvrian et al's (2005) work using a single instrument to research customer satisfaction and web usability. Based on the research conducted as part of the literature review, questions for this survey were designed to effectively probe the topic of SEO tools while building on previous work by SEOmoz (2008 & 2010). T. Summary information and rationale are presented below (the full questionnaire is available in Appendix E – Web Survey Questions). The survey consisted of the following sections:

1. Demographic questions

2. Keyword research questions

3. Monitoring and reporting questions
3.1.1 Background information questions

The survey's demographics section contained five questions probing the participant's SEO maturity, company and overall workflow. The questions in this section parallel SEOmoz's 2008 and 2010 SEO Industry Surveys, and provided data on how a participant's maturity, company type or clients impact their opinions of in SEO tools. All questions in this section were multiple-choice, which minimized participants’ time and the time for analysis.

3.1.2 Keyword research questions

The keyword research section contained six questions on how software is used in the participant’s keyword research workflow. One question of particular interest asks participants whether they need to transfer lists of keywords between different software applications (SEO tools and other software, such as Excel). This question was designed to determine whether participants have to switch between software applications as part of their keyword research workflow.

This section contained mainly multiple-choice questions, however one question asked participants to rank the importance of user experience factors and another optional short answer question asked participants how keyword research software can be improved.

3.1.3 Monitoring and reporting questions

The monitoring and reporting section of the survey contained eight questions about the participant's experience with SEO reporting and monitoring software. The structure of these questions paralleled the questions in the keyword research section (Section Keyword research questions3.1.2) of the survey. This sections contained six multiple-
choice questions designed to probe participant opinion on SEO reporting and monitoring tools, including how often participants generate SEO reports; why they generate reports; and what sort of information they typically include in their reports. Participants were also asked to rank the importance of user experience factors for SEO reporting and monitoring tools. A final question in this sections offered participants an opportunity to discuss how reporting and monitoring tools could be improved.

3.2 Validation of Survey Questions

As a final step in preparing the survey, we asked several SEO practitioners to review the survey. This process was undertaken to validate the wording and context of our questions; whether the questions accurately reflect the goals of the survey; and to ensure that the questions do not ask SEO specialists to reveal what they could consider to be “trade secrets”. To accomplish this, we approached three SEO specialists and/or web-marketing managers who the researcher has interacted with in an academic, professional or personal context. Amongst these reviewers were a SEO specialist, a web-marketing professional with a minor background in SEO, and a web-marketing manager who oversees the work of SEOs. All three of our reviewers felt the survey accurately reflected the research goals of the project and felt comfortable completing all questions within the survey. The reviewers written comments and suggestions were included in the final iteration of the survey and full reviewer comments can be found in Appendix H – Web Survey Reviewer Comments.

3.3 Incentive

A lottery-based incentive was offered to participants who take part in this study. The incentive for this study was an e-reader (winner's choice, approximate value $200CAD)
purchased by the researcher and shipped to the winning participant. An introductory question to the survey asked participants for their e-mail address in order to contact the winner. To determine the winner of the incentive, the e-mail addresses was placed in a sequentially numbered list and a random number generator was used to select the winning participant.

3.4 Participant Recruitment (Call for Participants)

In order to recruit high-quality participants to take part in this study, a variety of avenues were considered. SEO specialists who the researcher had interacted with in a professional, personal or academic context were contacted and encouraged to take part in this study. Participants were also encouraged to invite their friends and colleagues who are SEO specialists to take part in this study.

The nature of SEO lends itself to web-based recruiting; drawing on the extensive network of user-centered SEO communities on the Internet. These communities are seen by many SEOs as the lifeblood of the SEO industry, allowing experts from all over the world to ask questions, discuss techniques and interact with other SEOs. To recruit from these communities, we contacted community managers to obtain approval to post an invitation for community members to take part in our study. When permission was granted, or if a significant period of time passed with no response from community managers, an invitation was created using an invitation template (Appendix D – Recruitment Materials). One community manager didn’t respond to my private messages prior to my post, but once posted he came to the thread, endorsed it and tweeted it. The invitation post provided a link to our web survey. A list of communities contacted is available as part of Appendix D – Recruitment Materials.
While both personal and community focused recruiting efforts attempted to recruit participants by drawing on their trust in either the researcher or a SEO community, an additional avenue to recruit participants used direct e-mails to reach out to potential participants. The e-mails were sent to firms engaging in SEO activities and acted as an initial contact request, inviting SEO specialists at the firm to take part in the study.

Like any recruiting effort, qualifying who should be contacted as part of a direct e-mail campaign was an important task. In order to pre-qualify participants, we looked at the underlying principles of SEO to determine which firms were worth contacting. A simple Google search using location-based criteria, such as “SEO Toronto” or “SEO London”, displayed a variety of SEO firms practicing SEO in specific geographic regions. By obtaining a search result on the first two pages of a Google search result we were able to prequalify firms as ones adept at SEO and worth contacting.

3.5 Execution of the Survey

The web survey was conducted over a 4-week period from mid-April to mid-May, 2011 using the online survey tool SurveyGizmo. 27 participants completed the survey and were recruited through a variety of avenues (see Section 3.4). Recruitment was completed on May 1st, 2011 and the web survey was closed two weeks later. Table 3.1 shows the recruitment avenues which led at least one participant to take part in this study. More information about recruitment avenues explored as part of this research is available in Section 3.4 and Appendix D – Recruitment Materials.
Participants hailed from four different countries with the follow breakdown: 18 from Canada, 5 from the United Kingdom, 2 from the United States and 1 from New Zealand. Geographic information was not available for one participant.

Targeting for this study focused on globally accessible SEO forums, however, there are far more participants from Canada than any other geographic region. This may be in part due to the University of Guelph’s name carrying more credence with Canadian SEO specialists than SEO specialists from other countries. It’s unlikely that participant location had an impact on the results of this study as SEO practices and software packages are typically not designed to be location-specific.

3.6 Statistical methods employed

When analyzing the results from the web survey, we used Pearson’s chi-squared test to determine whether the results had statistical significance. Because of the low sample size for this study and several zero values existing in our data, this may create Type II error. For this reason, “borderline significant” findings are discussed along with statistically significant findings. Findings which show statistical significance (or near-significance) are discussed in Chapter 4. Findings and discussion which do not discuss statistical significance did not show statistical significance.

3.7 Participant background

In order to derive proper context for findings from this study, several background information questions were asked to participants during the web survey. These questions
focused on the participant’s experience as a SEO specialist and high level questions about their use of SEO tools.

**Participants were mature SEO specialists**

**Key Findings**: 70% of participants (n=27) had 3 or more years experience as a SEO specialist and 30% of participants have 1 to 3 years of experience. No participant had less than 1 year of experience as a SEO specialist.

The first question in our survey asked participants how long they have been working in the field of SEO. As shown in Figure 3.1 Error! Reference source not found., all participants (n=27) had at least one year of experience as a SEO specialist, 8 had 1-3 years of experience and the majority, 19 participants had more than 3 years of experience.

This suggests participants taking part in this study have spent time working with SEO tools and are able to offer informed opinions. No participant had less than 1 year of SEO experience which suggests novice SEO’s were either not interested in this study or were not comfortable enough with SEO tools to take part. Future studies should look to target novice SEoOs specifically to gain insight into how novices use SEO tools.
SEO specialists enjoy many working relationships

Key Findings: Participants don’t dedicate themselves to a single type of working relationship and typically performed SEO work for more for more than one type of client or organization. Additionally, over half of participants performed paid SEO work but also used their skills to perform SEO work on their own personal websites.

Figure 3.2 shows the type of SEO job arrangement participants engaged in, with participants encouraged to select all that apply. The largest group of participants (70%) performed SEO work as part of an agency environment, including both SEO-focused agencies and agencies offering services beyond SEO. 63% of participants were the on-staff SEO specialist for their company’s website, meaning they are responsible for optimizing the corporate or product focused websites which their company operates. 55% of participants performed SEO work for their own personal website(s) and 26% of participants freelanced their services to individuals or firms on an as-needed basis.
This question invited participants to select all categories which apply in order to determine whether participants had more than one SEO job or client focus. 81% of participants (n=27) had at least two sources of SEO clients. 59% of participants (n=27) had exactly two sources of SEO work, 15% of participants had three sources of SEO work and 11% of participants’ SEO experience spanned all four options listed. This suggests SEO’s seldom dedicate themselves to a single focus and take on a variety of SEO clients even when part of a structured company or agency environment.

93% of participants (n=27) who performed SEO work on their own personal websites also worked for other paying clients or companies. Much like a professional carpenter may build his own deck or shed, SEO specialists used their skills to create or manage websites during non-work hours. This finding also aligns with this researchers empirical findings from informal discussions with SEO specialists.

Many SEO tasks undertaken by each participant

Key Findings: All core SEO tasks were carried out by more than two thirds of participants, suggesting all tasks are an important part of being a SEO specialist. It also suggests participants must be familiar with many aspects of SEO and include each in their SEO workflow.

Participants were asked to select the tasks which they typically performed as part of their SEO work, selecting all that apply from a list of 8 of the most common SEO tasks: keyword research, on-page & content optimization, technical optimization & web development, link building, monitoring and reporting, developing a SEO strategy, competitor analysis and social media optimization.
As discussed in Section 2.6, the focus of this project is keyword research and SEO monitoring & reporting. The question was designed to determine the relative importance of keyword research and SEO monitoring and reporting compared to other SEO tasks by asking participants which SEO tasks they perform. Figure 3.3 shows SEO tasks which were typically undertaken by participants. Keyword research was included by 96% of participants (n=27) suggesting it is a very important task to include in SEO work. Monitoring and reporting work was included by 70% of participants (n=27), which suggests it is important but not as imperative as several other tasks. All tasks were undertaken by at least two thirds of participants, suggesting participants must be familiar with many different facets of SEO.

**More mature participants used more SEO tools**

**Key Finding:** Mature participants tended to use more SEO tools than participants with less SEO experience. This suggests SEO specialists accrue more software tools to
enhance their SEO offering and streamline their workflows as they mature; possibly as a result of evolving needs to execute SEO work.

Participants were asked how many SEO tools they include in their SEO workflow. The number of SEO tools tended to be higher for more mature participants. Figure 3.4 shows the number of SEO tools used by participants, broken down by their experience in the industry. We looked at the number of SEO tools used by participant experience to understand whether participant maturity impacts how much of a role SEO tools play for each user class. Participants who had 1 to 3 years of SEO experience tended to use less software tools than their more mature counterparts.

Figure 3.4 - Number of SEO software tools used by SEO experience

Only 50% of participants with 1-3 years experience (n=8) used 4 or more SEO tools, but 79% of participants with over 3 years experience (n=19) used 4 or more SEO tools as part of their SEO work. When looking at participants who used 6 or more SEO tools as part of their SEO work, the disparity is even more visible. Participants who had over 3 years experience were nearly three times more likely to use 6 or more software tools (36.84%, n=19) than their more junior counterparts (12.5%, n=8). This suggests SEO specialists accrue more software tools to enhance their SEO offering and streamline their workflow as they mature; possibly as a result of evolving needs. All participants used at least 2 SEO tools as part of their workflow, underscoring the overall importance of SEO tools to modern day SEO.

Demographic information helped shed light on our target user class, providing a glimpse into the background of our participants. Learning about participant maturity and
the SEO process they follow help us understand how underlying factors impact the adoption, use and opinions for SEO tools.

3.8 Semi-structured interviews

To provide additional findings and to probe some topics more thoroughly, participants were offered an opportunity to participate in short follow-up interviews. These informal interviews were completed remotely by phone or using web conferencing software, such as Cisco WebEx or Skype. A full set of sample questions is available in Appendix E – Web Survey Questions.

The final question in our web survey asked participants whether they would be interested in being contacted for a follow up interview. We selected participants from this group based partially on their responses to the web survey's long answer questions. Participants who offered opinionated responses to these questions were targeted for follow up interviews, allowing an opportunity for them to expand on their thoughts. Participants selected to take part in follow up interviews were contacted by e-mail to arrange an appropriate time and manner to conduct their interview.

If a participant selected yes to this question, they were prompted to provide an e-mail address to contact them. 15 participants indicated they would be interested in a follow-up interview. Participants were contacted by e-mail for possible interviews during July and August, 2011. Three of the participants agreed to take part in follow-up interviews, and the interviews were conducted in August 2011.
Each interview was conducted in a semi-structured manner, using a core set of questions (Appendix G – Follow-up Interview Questions). Results from the survey and semi-structured follow up interviews are discussed in the next chapter.
4 Web Survey Results and Discussion

In this chapter, we review and discuss the results from the web survey and semi-structured follow up interviews. Section 4.1 presents a concise summary of key findings from this research. In Section 4.2, we discuss overarching participant opinions regarding SEO tools in order to establish baseline information and determine how SEO tools fit into participants’ workflow. We discuss shortcomings in SEO tools identified by participants in Section 4.3 and discuss opportunities for improvement in Section 4.4. Finally, we conclude this chapter by summarizing several key takeaways from our results in Section 4.5.

4.1 Summary of key findings

The web survey and semi-structured interviews focused on how SEO tools can be improved. This survey looked at keyword research and SEO reporting and monitoring tools. This section discusses several of the key findings from our results. Subsequent sections provide more detail.

4.1.1 Baseline information on SEO tools

To understand the role of SEO tools in participants’ workflow, we probed several topics focusing on overarching participant opinions regarding SEO tools. Two key findings are presented below, with detailed results available in Section 4.2.

1. **SEO tools are critical to be able to support SEO work**

All participants who took part in this study believe SEO tools are critical in supporting their SEO work. Several participants noted that without SEO tools it would be incredibly time consuming or perhaps impossible to derive the information they need to do their job effectively. Participants indicated SEO tools are not perfect and there are shortcomings
and opportunities for improvement, but all participants felt that SEO tools provide necessary information to SEO specialists. These findings are discussed further in Section 4.2.1.

2. Accuracy is most important aspect of SEO tools

For both keyword research and SEO reporting and monitoring tools, accuracy was identified as the most important aspect of these tools. Participants believe SEO tools need to offer highly accurate and reliable information in order for it to be useful in their decisions making process. Participants with more SEO experience selected accuracy with a higher frequency than less experienced participants, underscoring the importance of accuracy in SEO tools. These findings are discussed further in Section 4.2.2.

4.1.2 Shortcomings in SEO tools

Having determined baseline information regarding SEO tools, participants described shortcomings in SEO tools. Two key findings from this section are presented below, with detailed results in Section 4.3.

1. Participants perceive shortcomings in accuracy

Baseline information regarding participant opinions on SEO tools determined accuracy was the most important aspect of SEO tools. We asked participants what the biggest shortcoming in SEO tools is and found accuracy was the biggest shortcoming in both keyword research and SEO reporting and monitoring tools. This represents a key shortcoming in SEO tools because, as participants note, accurate information is imperative to being able to execute SEO effectively. Participants offered two possible reasons why SEO tools do not deliver accurate results; 1) SEO tools are not maintained
or updated at the same frequency search engines change their algorithms, and 2) data sources which power tools are not adequate to provide accurate information. These findings are discussed further in Section 4.3.1.

2. Participants identified gaps in SEO tool functionality

Participants offered a variety of gaps in functionality they perceived in SEO tools. Key gaps include a lack of reporting tools for location-focused clients, such as a local plumber, and a lack of automation within a tool, requiring participants to spend more time interacting with SEO tools than they would like. Participants also believed SEO tools often don't offer robust data export functionality, which many participants require when creating custom reports for clients. These findings are discussed further in Section 4.3.3.

4.1.3 Possible solutions to overcome shortcomings in SEO tools

After determining baseline information on SEO tools and looking at shortcomings in SEO tools, we investigated possible solutions to overcome shortcomings and improve SEO tools. A primary focus of this research was opportunities for integration and many participant responses discussed how integration could improve SEO tools. These findings are discussed further in Section 4.4.

1. Integration is a potential solution to accuracy issues

Participants believed accuracy was the most important aspect of SEO tools but also the biggest shortcoming. In open-ended responses and during semi-structured interviews, participants offered suggestions to improve SEO tools through better integration. The most common response brought forward by participants focused on integrating data from
several disparate data sources in order to create a richer data pool for SEO tools. These findings are discussed further in Section 4.4.2.

2. Participants want web marketing metrics alongside SEO metrics

During semi-structured follow up interviews, all participants discussed how SEO work is often part of a larger web marketing endeavour. The larger web marketing endeavour may include SEO alongside pay-per-click advertising and social media marketing. Participants discussed how including metrics from other avenues of web marketing alongside SEO metrics would improve SEO reporting tools and provide richer data for their decisions making process. Additionally, participants offered suggestions on how conversion tracking and user engagement metrics should be included in SEO reporting tools to allow for analysis of what users do when they get to a site from a search engine and to compute return on investment for SEO projects. These findings are discussed further in Section 4.4.4.

4.2 Baseline information regarding SEO tools

As a starting point for this research, we established background information on participant opinions regarding SEO tools. This section looks at the role SEO tools played in the participants’ workflow (Section 4.2.1) and overarching participant preferences (Sections 4.2.2 and 4.2.3).

4.2.1 SEO tools are a necessity for SEO specialists

Key finding: Participants believed SEO tools are critical to execute SEO work. Participants want their SEO tools to provide highly accurate data and automate menial tasks.
According to participants, SEO tools are a crucial part of any SEO workflow. Even though some participants felt there are opportunities for improvement in SEO tools, all participants believed there would be no way to effectively execute SEO work without SEO tools.

[SEO tools] are very, very important. Competition is growing in every niche and as Google changes their algorithm, I think [a good SEO tool is] one of the most important thing to [have]. There’s a lot of misconception out there that [tool makers] know what they’re doing and it’s important to choose the right tool to help you do your job.

There is no tool that helps you do everything automatically, so there is still a lot of common sense. You need to get the right tools and have common sense in order to be [successful].

One participant even went as far as to say the role played by SEO tools would need to be replaced by bringing on an extra employee:

Had I not had SEO tools, I would have been looking for a co-op type role to do a heck of a lot of manual data entry work in order to have the same data. There is huge value and if SEO tools didn’t exist, some of that data might not exist either. It is very helpful for insight gathering for clients. [SEO tools are] certainly not perfect, but having something that’s half there is a thousand times better than nothing.

This comment is reflective of the attitude participants presented in each of our interviews; SEO tools are an important part of being able to execute SEO work. Even though participants don’t believe SEO tools are perfect, an imperfect SEO tool is much
better than no tool at all. Findings from the web survey aligned well with interview findings; SEO specialists would like SEO tools to provide highly accurate data and automate menial tasks so they can focus on interpretation and analysis rather than compiling data. Additionally, the information SEO tools provide is a necessary part of completing SEO work and SEO specialists must use SEO tools in order perform even modest SEO work.

4.2.2 SEO tool accuracy is paramount

In order for SEO tools to be useful to SEO specialists, tools must provide highly accurate information. Accuracy and validity of information provided by SEO tools was a consistent theme brought forward by participants of this study.

*Accuracy was the most important aspect of keyword research & SEO reporting and monitoring tools*

*Key Findings:* Accuracy was the most important aspect of keyword research tools as well as the biggest shortcoming. Looking at these results by participant experience reveals less mature participants found functionality to be the biggest shortcoming in keyword research tools. Accuracy was also the most important usability factor in SEO reporting and monitoring tools, followed by functionality, efficiency, ease of use and immediacy of results. These rankings align with results observed for keyword research tools, with all usability factors displaying a similar level of importance for both types of tools. This suggests the relative importance of these usability factors applies to SEO tools in general and perhaps to SEO specialists as a user class.

Participants were asked to rank the importance of seven usability factors, based on their experience using keyword research software and SEO reporting software. The
question asked participants to use a 7-point scale from 0 (least important) to 6 (most important).

Figure 4.1 compares box and whisker plots for each usability factor across both keyword research (left) and SEO reporting & monitoring tools (right) (Question 9, Appendix E – Web Survey Questions).

![Figure 4.1 – Importance of each usability factor by SEO tool type (Keyword research tools and SEO reporting and monitoring tools)]](image)

Accuracy was the most important usability criteria for keyword research tools to meet, ranking above all other usability criteria offered. Efficiency, functionality, ease of use, immediacy of results and ease of access all showed similar levels of importance, across both tool types.

Participants were asked to rank the importance of usability factors in SEO reporting and monitoring tools, with options and wording which mirror Question 9, discussed previously in this section and available in Appendix E – Web Survey.
Questions. The right columns in Figure 4.1 shows the mean importance of usability factors (across all participants) in reporting and monitoring tools.

Participants ranked accuracy as the most important usability factor, followed by functionality, efficiency, ease of use, and immediacy of results. Ease of access and integration with other software were viewed as the least important usability factors.

Comparing rankings for keyword research and reporting and monitoring tools allows us to see the relative importance of usability factors for each class of SEO tool. Mean rankings were nearly identical for each usability factor offered to participants for both keyword research and reporting and monitoring tools. The similarities in the importance of usability factors across the two SEO tool classes suggest these findings apply more generally to all SEO tools. Regardless of the type of tool considered, accuracy ranked as the most important factor for nearly all participants, while time invested, functionality, ease of use and immediacy of results are typically more important than ease of access and integration with other software. Ease of access has a slightly higher mean ranking for keyword research tools than SEO reporting and monitoring tools.

Google AdWords Keyword Tool was found to be a primary keyword research tool

Key Findings: The Google AdWords Keyword Tool was the most widely used keyword research tool, showing nearly universal adoption by participants. Google’s position as the search market leader gives Google the most accurate keyword research data, and this translates into high levels of user adoption.

Participants were asked what keyword research tools they use or had previously used when performing keyword research. They were asked to select from a list of 7 popular
keyword research tools with an option to include additional tools not within our list.

Figure 4.2 shows each keyword research tools frequency of use by participants. Only keyword research tools used by two or more participants are included in this figure, however a full breakdown of tools is available in Appendix C – Glossary of Selected SEO Tools.

![Keyword Research Tools Used by Participants](image)

**Figure 4.2 - Keyword Research Tools Used by Participants (Question 8, Appendix C – Glossary of Selected SEO Tools)**

The Google Adwords Keyword Tool (GAWKT) had nearly universal adoption by participants, with 96% of participants (n=27) indicating they used Google's keyword tool as part of their keyword research workflow. Wordtracker (70%), SEOmoz's Keyword Research tools (63%), and Yahoo! Search Marketing/Overture (48%) also showed a high level of user adoption, however all other competing keyword research tools were used by far fewer participants than the GAWKT.
Figure 4.3 - Keyword Research Tools Used by Participant Experience (Question 8, Appendix E – Web Survey Questions)

Figure 4.3 shows adoption of keyword research tools broken down by participant experience. While these results did not show statistical significance, this figure reveals participants with more experience showed a much higher level of adoption for some keyword research tools compared to their more junior counterparts, including Wordtracker (89% to 25%), Yahoo! Search Marketing/Overture (63% to 13%), Keyword Density Tools (42% to 13%) and WordStream (26% to 0%). These findings corresponds with demographic information from Chapter 3 showing participants with more experience were also more likely to use a greater number of SEO tools than those with less SEO experience. However it does not address why these particular tools have a large disparity in user adoption based on participant experience while others had a very similar
rate of adoption. One possible reason could be costs associated with some tools. Tools like Wordstream and Wordtracker have monthly costs to access their keyword research tools. This may dissuade newer SEOs from using these tools.

Some tools (like Yahoo! Search Marketing/Overture and Keyword Density Tools) became less relevant through changes in search engine algorithms or the emergence of superior competitive software over the last several years. In Yahoo! Search Marketing/Overture's case, Google simply provided a superior tool offering much of the same information as Yahoo!’s tool. Google's keyword data is derived using a larger sample size, as Google’s search market share has become much larger than Yahoo!’s.

The concept of keyword density tracking (i.e., counting the frequency of use for keywords on a page) was important during the early days of web search, however the practice of "web spamming" made search engines adjust their algorithms so keyword density became less important in SEO (Singhal, 2004). More mature SEOs may still use these tools as part of their workflow or they may be thinking back to projects where these tools were still relevant.

Several keyword research tools had a similar rate of use by participants regardless of their SEO experience. The GAWKT, SEOmoz Keyword Tools, and Market Samurai all showed a very similar rate of adoption across participant experience classes. The GAWKT had nearly universal adoption regardless of participant experience, suggesting Google's well-known name in the search field drove participants to GAWKT. Google's position as the world's search leader – with over two thirds of US and global searches performed on Google's search network – means they have the largest sample of search data for SEOs to look at for keyword research (Goodwin, 2011).
While Google's position in the search industry gives it an advantage over other keyword research tools, SEOmoz has a unique position as a very trusted SEO community portal. SEOmoz's position as a leading SEO community may help to reach both novice and experienced users who may initially visit the site for something unrelated to keyword research. Additionally, all three of these tools (GAWKT, Yahoo! Search Marketing/Overture & SEOmoz) offer or previously offered at least some of their keyword research tools free of charge.

4.2.3 Participants required many forms of information and functionality in SEO tools

Understanding the desired functionality participants would like SEO tools to offer is important to establish what SEO tools should offer SEO specialists. Investigating what information participants look for in SEO tools as well as the roles SEO tools play as part of a larger SEO process help establish a baseline for what information and functionality SEO tools should offer.

Participants consider many keyword research inputs

Key Findings: Participant responses revealed relevance to content and monthly search volume as the most important inputs to consider when performing keyword research. Other inputs like long-tailed keyword variants or existing search visibility scored well, however they fell below the two top-ranking keyword research inputs.

To understand the importance of keyword research inputs to SEO specialists, we asked participants to rank the importance of seven common inputs which may be considered when performing keyword research. Figure 4.4 shows the mean rankings for keyword research inputs using a ranking scale from 6 (most important) to 0 (least important).
These keyword research inputs offered to participants represent common inputs or datapoints which SEO specialists may consider when reviewing and considering keywords to include (or target, as it is commonly referred to) as part of a SEO program. More detailed information about some of these inputs is discussed in the glossary in Appendix B – Glossary of Terms.

Figure 4.4 - Importance of keyword research inputs (Question 7, Appendix E – Web Survey Questions)

Figure 4.4 suggests relevance to target content and monthly search volume were the most important factors, ranking well above all other inputs. The remaining inputs offered to participants showed a similar level of importance but ranked well below that of relevance to target content and monthly search volume.

Determining inputs which are important to consider when conducting keyword research allows us to understand what features, functionality and data points participants look for in keyword research tools. Moreover, it allows us to consider opportunities for
integrating aspects of keyword research into a single tool by understanding what participants look for when performing keyword research. Participant responses suggest keyword research tools should certainly include monthly search volume information along with a method for determining a keyword's relevance to subject content. Offering additional functionality, such as long tailed variants or search ranking information, would be useful to many participants but should not be primary focus of a keyword research tool.
Participants include many types of information in SEO reports

**Key Findings:** Participants include many types of SEO information in their SEO reports and derive this information from a handful of SEO data sources.

Participants were asked what inputs and data sources they use to create SEO reports (Questions 15 and 16, Appendix E – Web Survey Questions). Figure 4.5 shows types of SEO information included in SEO reports, while Figure 4.6 shows which SEO data sources participants looked to when creating SEO reports. Both questions allowed participants to select all that apply.

![Figure 4.5 – Types of SEO information included in SEO reports (Question 15, Appendix E – Web Survey Questions)](image)

Participants typically included many inputs when creating SEO reports, with 5 inputs included by over 60% of participants (n=25). These results suggest participants create SEO reports using a variety of inputs and each report may contain many different types of information. A follow up question designed to determine the type of data sources participants use to find information to include in their SEO reports, as shown in Figure 4.6
The results from these two questions showed participants typically used a variety of data sources to create their SEO reports. Over half of participants included server-side web analytics, search engine results, inbound link data and competitive analysis to create SEO reports. Third party web analytic tools to measure web traffic, such as Alexa.com or Complete.com, were used by under 20% of participants (n=25) compared to server-side web analytics, such as WebTrends or Google Analytics, which were used by over 90% of participants (n=25). This suggests participants preferred to include traffic metrics in their SEO reports from server-side analytics. This may be due in part to how third party analytics derive their traffic estimates. These services typically use a sample of web users and extrapolating the data (“Compete.com - Methodology,” 2011), while server-side web analytics typically derive their tracking data from all visits to the website.

Keyword metric tools were used as a data source by under 40% of respondents but keyword metrics were included in SEO reports by over 60% of participants. This suggests participants may include keyword metrics derived from data sources other than
specific keyword metric tools. Keyword metric tools may be useful for including keyword search volumes but server-side analytics are typically better suited to provide information about which keywords actually send search traffic to the website and whether that traffic turns into a customer or performs an action on the site.

**A handful of participants want SEO tools to offer report customization options**

A handful of participants felt reporting and monitoring tools should include robust report customization options. One participant wanted reporting and monitoring software to allow him to "create templated client reports with plenty of easy to use customization options." (Web survey short answer) Several participants discussed how reporting and monitoring software should allow users to narrow down the data they would like to include in their client reports, looking for "options to narrow down the report to specific, relevant data for the client" (Web survey short answer).

**The majority of participants felt report writing should be left to Excel and Word**

*Key finding:* Participants preferred using software such as Microsoft Excel or Word to create SEO reports and wanted SEO tools to simply provide primary information to go in the report. Participants revealed that SEO clients are more comfortable with reports in familiar applications, such as Excel or Word, and may require explanations or commentary which is not available within auto-generated reports.

Participants were questioned about how they typically create and present SEO reports to clients. Excel was used by all participants who took part in follow up interviews to create SEO reports because clients are almost universally comfortable with Excel. This sentiment was captured in the following:
If I was working with any North American client, I felt like I could get a report spit out in about a half an hour including what search [search] engines, keywords and competitors to track. Excel was fine because I needed to get it into something comfortable for client. (Semi-structured interview comment)

and,

Excel is pretty standard. The reason being, for our clientele, is if we’re dealing with an owner or a manager, certainly we’re not dealing with anyone who is up to speed on any of this stuff. We often have to [explain] the stats, show how stats change from month to month or year to year. Sometimes it’s just easier to export [the report] into Excel or Word and simplify the information so customers can understand it. (Semi-structured interview comment)

This participant went on to add:

"Because we are a marketing firm, and I’m sure agencies are the same, you don’t want to show to your client all you’ve done is copy a report from Google Analytics or other [SEO tools].” (Semi-structured interview comment)

Client comfort is a primary concern when creating SEO reports. Participants indicated Excel is the best platform to create client-facing reports. The preceding comments regarding what should be shown to a client reveals a secondary consideration in how reports are created; avoid showing the audience what goes on behind the curtain.

Participants also preferred to work within SEO tools where possible, but also felt it is not
always the best way to present findings to a client or stakeholder. When presenting information to a client, all participants prefer to use presentation software such as Excel or Word over what can be generated by SEO tools.

### 4.2.4 Conclusions

The information gleamed from participants’ web survey and follow-up interview responses paint a picture of participants’ preferences and beliefs regarding SEO tools. All participants felt SEO tools are necessary and that SEO work could not be executed without SEO tools. Participants identified accuracy as the most important aspect of SEO tools and indicated they look for many types of information or data sources while performing SEO work. With this information in mind, we look to understand the shortcomings in SEO tools as perceived by participants.

### 4.3 Shortcomings in SEO tools

While all participants believed SEO tools are a necessity to perform SEO work, they also indicated today’s SEO tools have shortcomings. The primary shortcoming of SEO tools, as identified by participants, was accuracy of information provided by SEO tools (Section 4.3.1). Participants also discussed usability shortcomings in SEO tools (Section 4.3.2) and gaps in functionality (Section 4.3.3).

#### 4.3.1 Shortcomings in accuracy

Participants rely on SEO tools in order to be able to perform SEO work. For participants to be successful, they need SEO tools which provide accurate and timely data for decision making and reporting. This section explores participant opinions regarding the accuracy of information provided by SEO tools.
Accuracy was the biggest shortcoming of keyword research and SEO reporting tools

Key Findings: Accuracy was identified as the most important aspect of SEO tools, but it was also identified as the biggest shortcoming in SEO tools. Accuracy was overwhelmingly selected as the biggest shortcoming in keyword research tools, but for reporting and monitoring tools, participant responses showed more variance.

Participants were asked to select the biggest shortcoming in keyword research software, selecting from the same list of usability factors discussed in Section 4.2.2. Figure 4.7 shows overall participant responses (Question 10, Appendix E – Web Survey Questions).

The biggest shortcoming in keyword research tools, as identified by participants, is accuracy, followed by functionality, time invested and finally integration with other software.

Participants who discussed accuracy in open-ended responses typically want keyword research tools to derive better search volume statistics, indicating search
volumes were not always accurate. One participant wanted keyword research tools to simply offer "better estimate[s] of search volume", while another was more specific, looking for "accurate data for [search] traffic volume for each of the top 5 search engines" (Web survey short answer responses). Another participant whose comments focused on accuracy brought up an interesting point about search volumes. This participant would like keyword research tools to "account for 'spam' searches that inflate [search volume],” adding “[website owners] search repeatedly to see where their website ranks” (Web survey short answer). The commonality across all participant comments which focused on accuracy was that keyword research tools do not provide adequately accurate search volume statistics.

Accuracy was found to be the most important usability factor in keyword research software but it is also the biggest shortcoming. Even more important than offering robust functionality, these results suggest SEO tools must collect and display highly accurate information to be of value to SEO specialists.
Participants were also asked to select the biggest shortcoming in SEO reporting and monitoring tools, as shown in Figure 4.8. Accuracy was the biggest shortcoming in SEO reporting and monitoring tools, however participants showed more variation in their responses compared to keyword research tools. One participant added the write-in answer "Cost" as an additional factor, citing it as the biggest shortcoming in SEO reporting and monitoring software.

**Figure 4.8 - Biggest usability shortcoming of SEO reporting and monitoring tools (Question 19, Appendix E – Web Survey Questions)**

Accuracy was the biggest shortcoming in reporting and monitoring tools and several participants discussed these shortcomings in their open-ended responses. Participants feel reporting and monitoring tools should "provide accurate data for each important metric, i.e. accurate [search] rankings" (Web survey short answer). One participant discussed how reporting and monitoring tools should include both high level and granular
information. This participant in particular wants to find all the inbound links to a given website, while also looking for information to determine each link's quality.

To compare shortcomings across SEO tools classes, Figure 4.9 shows a comparison between the biggest shortcomings for keyword research tools and reporting and monitoring tools. Pearson’s chi-squared test was performed on this data and with a p-value of 0.06, we found this to be a borderline case where we may be able to reject the null hypothesis that there is no difference in the biggest shortcoming across SEO tool classes. Based on our small sample size and the possibility of Type II error being introduced and providing a false negative we can reject the null hypothesis and conclude that perceived shortcomings do indeed vary based on SEO tool class.

![Figure 4.9](image)

*Figure 4.9 - Biggest shortcoming in SEO tools by SEO tool class*

Figure 4.9 Error! Reference source not found. shows participants were more varied in their opinions regarding the biggest shortcoming in reporting and monitoring tools. This is a contrast to keyword research tools where 67% (n=27) of participants selected
accuracy as the biggest shortcoming while only 32% (n=25) selected accuracy as the biggest shortcoming in reporting and monitoring tools. A similar percentage of participants felt functionality and time invested are the biggest shortcoming of both keyword research and reporting and monitoring tools. Three usability factors – ease of use, immediacy of results and cost – are identified by at least one participant as the biggest shortcoming of reporting and monitoring tools, however this was not the case for keyword research tools. These results suggest shortcomings in SEO reporting and monitoring tools vary depending on participant preference but keyword research tools have a major shortcoming in accuracy.

**Two sources of poor SEO tool accuracy**

*Key finding:* Discussions with participants suggested shortcomings in SEO tool accuracy may be due to two key problems: 1) failure of SEO tools to keep up to date with search engine algorithm changes; and 2) lack of relevant data or data sources to power the tool. Participants showed strong opinions regarding shortcomings in SEO tools in both the web survey and semi-structured interviews. Results from the web survey indicate accuracy was the biggest shortcoming in SEO tools while also being the most important aspect of a SEO tool. Discussions revealed issues in tool accuracy may not be a result of poor tool design but rather toolmakers being unable to keep up with the pace of change by major search engines. “Changes Google makes and how the [search] landscape changes can change everything on a dime,” one participant offered (Web survey short answer). He added “if you take 6 months to get to the market with [a tool], you’re 6 months out of date” (Semi-structured interview comment). This comment suggests it is imperative for
SEO tools to remain in a constant state of evolution in order to remain relevant and accurately model the constantly shifting search landscape.

Another participant discussed how much data is available to SEO specialists, but the data is often unable to be made into something accessible and/or useful. The participant offered this comment when asked how data limitations can be overcome:

[Tool makers should] create better connections with the places where people are searching and feed that into a central database. What connections can they make with vendors, data providers, search engines, [and] social media sites in order to compile a richer database than any one source.

The data lives in a lot of places, but it’s not readily available – you can also buy information about how people search, what sites they have visited, etc. (Semi-structured interview comment)

These comments suggest there are two core issues which contribute to shortcomings in accuracy: 1) failure of SEO tools to adapt to search engine algorithm changes; and 2) lack of relevant data or data sources to power a tool. While accuracy was identified as the core shortcoming in SEO tools, several other shortcomings in user experience were also identified.

4.3.2 Shortcomings in user experience

Through the web survey and follow-up interviews, we looked to understand user experience shortcomings in order to determine opportunities where SEO tools can be improved. This section explores participant opinions regarding user experience of SEO tools.
Usability shortcomings in keyword research tools varied based on experience

Key Finding: Participant perception of the biggest shortcoming in keyword research tools varied based on participant experience as a SEO specialist. Participants with less experience tended to identify gaps in functionality, and to a lesser extent accuracy, while more mature participants indentified a core shortcoming in accuracy. Pearson’s chi-square test revealed the results are statistically significant and we can reject the null hypothesis that participant experience does not impact perceived shortcomings in keyword research tools.

Figure 4.10 shows the biggest shortcoming in keyword research tools by participant experience. When looking at responses by participant experience, functionality was the primary shortcoming for participants who have 1-3 years of SEO experience. Participants with 3 or more years of SEO experience overwhelmingly choose accuracy as the biggest shortcoming in keyword research tools.
These results suggest more junior SEOs perceive functionality gaps in keyword research tools, but more experienced SEOs have found a suite of keyword research tools to overcome these functionality gaps. Experienced SEOs were more likely to select accuracy as the biggest shortcoming in keyword research tools, suggesting they found tools with all the functionality they required, but were not satisfied with the level of accuracy the tools deliver. More mature participants were also more likely to use a greater number of SEO tools, suggesting the additional tools fill the gaps in functionality perceived by less mature participants.

Pearson’s chi-square test was used to check for statistical significance with the null hypothesis stating: participant experience does not impact perceived shortcomings in keyword research tools. With a p-value of 0.045, we can reject the null hypothesis and
conclude participant experience impacts how participants perceive shortcomings in keyword research tools.

**Most participants need to transfer keyword lists between SEO tools**

*Key Finding:* Two thirds of participants needed to transfer keyword lists between SEO tools as part of their workflow regardless of how many SEO tools they use. The largest group of participants who transfer keyword lists are those who use 6 or more SEO tools. These findings suggest using more SEO tools increases the likelihood of needing to transfer keyword lists between tools.

SEO tools often require lists of keywords or URLs as inputs to aid in keyword research, reporting or other SEO tasks. When using more than one SEO tool, there may be times when lists of keywords must be reconciled between disparate tools. A question in the web survey was designed to ask participants whether they need to transfer lists of keywords between SEO tools (Question 6, Appendix E – Web Survey Questions). The goal of this question was to determine whether a gap in user flow exists which can be alleviated through improved integration between classes of SEO tools. We can infer that participants who are required to transfer keyword lists between SEO tools would find a more integrated flow to be an improvement over their existing process.

While these results were not found to have statistical significance, we are still able to note several interesting findings. All participants used at least two SEO tools as part of their SEO workflow, as discussed fully in the Demographic portion of Chapter 3. 67% of participants (n=27) were required to transfer keyword lists between different SEO tools as part of their workflow. Looking at responses to this question alongside the number of software tools used reveals interesting results. Nearly 90% of participants who used 4 or
more SEO tools (n=8) are required to transfer keyword lists. Only 57% of participants who used five or less SEO tools (n=19) are required to transfer keyword lists between SEO tools. Figure 4.11 shows the percentage of participants who needed to transfer keyword lists between software applications, broken down by the number of software tools they use.

![Figure 4.11 - Number of SEO tools used by need to transfer keyword sets (Question 6, Appendix E – Web Survey Questions)](image)

Regardless of the number of SEO tools used, over 50% of participants from each category needed to transfer keyword lists between SEO tools. Participants who used 6 or more software tools were also typically more mature SEOs, as discussed in Section 3.6. This suggests mature SEOs are more likely to transfer keyword lists between SEO tools. These results suggest there is a usability gap in SEO tools which can be resolved through better integration. In order to determine other gaps in SEO tools, we looked at participant responses regarding the functionality of SEO tools.
4.3.3 Functionality gaps identified by participants

Participants offered a wealth of information regarding gaps they perceive in SEO tools, such as a lack of local search results for location-specific websites (i.e., a website for a local plumber). One participant commented: "I've spent a lot of time in the local search marketing/local SEO field. I have not found one product that is an all-in-one package for local business to track their local business listings on the web, like Google Places/Bing Local/etc. It would be great to have software to track map rankings [and] traffic" (Web survey short answer comment). Others wanted to include proxy support in ranking and monitoring tools in order to simulate searches from a specific geographic region so "if a client is in California [it will] use a California proxy server to provide more accurate results" (Web survey short answer comment).

Beyond location-specific gaps, participants also identified a lag-time in the reactivity of SEO tools to changes in search engine results or search algorithms. One participant commented he wished Google would “stay still” so he can “scale the working tactics and forget the non-working ones” (Web survey short answer comment). Another participant explained “unfortunately SEO software is always playing catch up with the big search engines. It would be nice if they were ahead of the curve, but that’s not always possible” (Web survey short answer comment). Search engines are still somewhat of a black box in many cases and reactivity of SEO tool makers to these changes can make or break a SEO tool. SEO tool makers should always strive to remain current even in the face of nearly constant change in search engine algorithms.
Keyword research tools should improve automation and efficiency

Several participants discussed how keyword research tasks should be automated by tools in order to improve efficiency. One participant wanted his keyword research tools to do a better job of "automating menial processes [and] performing multiple analysis steps (e.g. permutations and competitor rankings) " while another simply wanted SEO tools to "cut down the time [he] spends performing keyword research" (Web survey short answer comment). Several participants considered integration and improved interface design methods to achieve improved efficiency. One participant wanted to perform keyword research "quicker [while ensuring] the results are as up to date as possible," while also "making the workflow more intuitive [through an improved] GUI" (Web survey short answer comment). By looking at the larger goals and tasks undertaken as part of keyword research, integration offers a means to achieve improved efficiency by unifying tasks and data into an automated tool.

Data export is often awkward and does not align with participants’ workflow

Participants discussed integration with other software (including export functionality) as areas where keyword research software should be improved. One of these participants offered explicit opportunities for integration, suggesting keyword research tools should "combine Google Insights and Google’s Keyword Tool to understand the level of interest and demand for certain terms or keyword phrases" (Web survey short answer comment). Another was more ambiguous, looking for keyword research tools to "get the right kind of data, [and display it] with cross-referencing capabilities" (Web survey short answer comment). Cross referencing and control of data was a common theme throughout many participant responses regarding data export.
Participants also offered comments focusing on exporting data to other applications, such as spreadsheet software like Microsoft Excel. Participants wanted to have control over the data they export and the method in which it is exported, looking for opportunities such as "being able to complete multiple [keyword] searches and add them to one large list to export" (Web survey short answer comment). This participant also added "it's very annoying to have to download 15 spreadsheets to compile one keyword list" suggesting there is a major gap between keyword research tools and the participant's keyword research workflow (Web survey short answer comment). The most common export types discussed by participants were spreadsheets or comma separated value (CSV) files. One participant discussed how he wants keyword research tools offer a "smooth export of data with lots of options to manipulate the export, ultimately leading to easy-to-obtain spreadsheets" (Web survey short answer comment).

4.3.4 Conclusions

These responses show gaps in SEO tools and reveal opportunities to improve SEO tools. Reviewing these results revealed opportunities for integration of functionality, data and task flow in order to create keyword research tools which are better able to meet the needs of SEO specialists. With this information in mind, we investigated possible avenues to improve SEO tools in Section 4.4.

4.4 Opportunities to improve SEO tools

In the preceding sections, we investigated the landscape of SEO tools and shortcomings in SEO tools as perceived by participants. Through open-ended participant responses in the web survey and during semi-structured follow up interviews, participants offered many suggestions focusing on how SEO tools can be improved. Before moving ahead
with discussing how SEO tools can be improved, it is important to consider how perceived improvements in SEO tools may actually be detrimental to SEO specialists.

4.4.1 Participants were wary of over-integration of or reliance on a single SEO tool

While all participants felt improvements can be made to SEO tools, one participant was more cautious about how SEO tools should be integrated or engrained into his SEO workflow:

*I think it’s difficult because the more [tool makers] try and integrate with everything, the less effective [they] become. A lot of people have been burned. You could invest a lot in integrating a tool into your workflow only to see the landscape change and the tool become less effective.* (Semi-structured interview comment)

This comment suggests that opportunities for integration should be explored, but it should be done cautiously to ensure updates made to SEO tools are improvements over existing tools. Over-integration of SEO tools or overreliance on a single SEO tool may cause harm if the tool is not designed or maintained properly. Comments by all participants in semi-structured interviews suggested there is much room for improvement in integration across the key areas of SEO (keyword research, page optimization, link building, and reporting) but tool makers should be cautious to ensure any changes are improvements for the end user. All participants who took part in semi-structured interviews commented on how including SEO specialists in the tool design process is beneficial to create SEO tools which represent improvements over existing tools.
4.4.2 Solutions to shortcomings in accuracy

Accuracy was found to be the most important aspect of keyword research and reporting and monitoring tools but also the biggest shortcoming. Several participants discussed accuracy in their responses, with some even discussing how integration could be an avenue to improve accuracy. This section explores possible solutions to improve the accuracy of SEO tools.

Participants want data to be amalgamated through SEO tools

"Source data is a huge factor with keyword research," one participant offered in an open-ended web survey response, adding he "wants the richest data pool available" to aid him in his keyword research (Web survey short answer comment). This comment is reflective of participant attitudes regarding data amalgamation; the richer the data the better. Another participant suggested reporting tools should "port over data between the API's [from] other search tools to come up with the most accurate results" (Web survey short answer comment). Amalgamating data from multiple data sources as a solution to accuracy issues was a common theme brought forward by many participants. One participant was highly critical of existing software, offering "accuracy is a recurring issue [and] to conduct truly insightful analysis of SEO success, on page analytics, search rankings, and off page metrics need to be combined" (Web survey short answer comment). This participant expanded on his thought, adding "there are no tools presently capable of doing all of this well" (Web survey short answer comment). These comments underscore the concept of improving SEO tools by integrating data sources and data types. Integration of data sources provides an opportunity to improve accuracy through the creation of more robust databank using multiple data sources.
4.4.3 Determining the desired level of complexity and functionality

Determining the desired level of complexity and functionality to be included in SEO tools is imperative to be able to create improved SEO tools. Participants discussed several avenues where improved functionality would improve SEO tools to align better with their desired workflow. This section discusses opportunities for SEO tool improvement that would help align SEO tools with participants’ desired workflow.

Participants offered many opportunities focusing on desired SEO tool functionality

Functionality was the biggest shortcoming in keyword research tools according to participants who have between 1 to 3 years SEO experience. Participant comments offered additional inputs or data points they wish to see included in keyword research tools. One participant "[liked] the Google keyword tools, but would prefer if [it] also showed competing pages rather than competing advertisers" also noting "this software is meant for advertising" (Web survey short answer comment). Several participants looked for advanced functionality which would typically be associated with power-users, asking for "more advanced commands for generating related keywords" (Web survey short answer comment). Suggestions of this nature include a list of terms to exclude for keyword suggestions, information about the likelihood of a click-through, and even a feature to export keyword research findings to create a website navigation structure. These findings show keyword research tools would benefit from integrating keyword research tasks and inputs into a more cohesive tool. Additionally, these results show SEO specialists are a viable source for determining functional requirements during the requirements gathering phase of SEO tool development.
Streamlining SEO workflow key to improving SEO tools

Participants wanted their reporting and monitoring tools to streamline their reporting efforts, offering comments such as "cut down the time I spend writing reports" and "make reporting quicker [and] automate more repetitive tasks" (Web survey short answer comment). A core theme of these responses was the goal of automating menial processes, such as retrieving search engine results. Participants expected tasks such as these to be performed automatically and distilled into a format which can be included in SEO reports. Additionally, participant responses also discussed how this should be done automatically on a pre-scheduled basis.

SEO tools should offer rich data export in a portable format

Several participants’ comments focused on creating a more streamlined export process from SEO tools to allow SEO data to be incorporated into programs like Excel, PowerPoint or Word. "Excel is still the de facto method for sharing lots of data such as keyword research," one participant offered, going on to say "the ease of getting that data from an analytical tool into an easy-to-digest report is very important" (Web survey short answer comment). Participants generally felt a CSV export offered a platform independent way to take results from SEO tools and include it in presentation software. These points speak to how SEO tools can be integrated into an SEO specialist’s workflow, understanding SEO tools are merely an input to a larger reporting workflow. Having the ability to export data from a SEO tool to spreadsheet, word processing or presentation software will improve SEO specialists’ efficiency.
### 4.4.4 Opportunities for integration

Through comments to open-ended questions and semi-structured interviews, participants articulated several opportunities regarding how integration can be a means to improve SEO tools.

**Integration as a solution to SEO tool shortcomings**

Participants who discussed opportunities for integration typically focused on how integration is a solution to other shortcomings in reporting and monitoring tools, such as accuracy and report customization. One participant wanted reporting and monitoring tools to have "the ability to merge SERPs into keyword research" (Web survey short answer comment). Another wanted SEO tools to "do it all -- inbound links, anchor text, trends, competitor analysis and social metrics" going on to add "currently there is a gap in the market for social metrics [and] I need to know who is mentioning what at all times" (Web survey short answer comment). Another suggestion offered by one participant stated: "[integrate] rank metrics with on page metrics (bounce, conversion, etc) on a keyword basis" to create richer reports from a single tool (Web survey short answer comment). Another participant commented that he would like to see a tool which "overlays actions and results" to integrate search engine ranking information with traffic and conversion metrics (Web survey short answer comment).

Participants included a variety of inputs to create SEO reports and derive this information from many data sources. By looking for ways to combine SEO reporting data sources, it is possible to provide multiple report inputs through a single SEO reporting tool. This approach would allow for comingling of data and additional analysis to be done by through a unified SEO reporting tool. Abstracting the retrieval and data
Manipulation of SEO reporting will give SEO specialists more time to focus on analysis or other proactive SEO tasks.

Participants discussed many interesting opportunities for integration and some even explicitly suggested how better integration can achieve greater accuracy and improve the functionality of SEO reporting and monitoring tools. Moreover, participants discussed how SEO tools which fit their reporting workflow will allow for richer analysis and improved efficiency. Creating more integrated SEO tools can help improve other tools aspects such as accuracy, functionality, efficiency or ease of use.

Some participants want an all-encompassing SEO tool

A handful of participant comments discussed an all-encompassing SEO tool combining functionality from keyword research and reporting and monitoring tools. One participant comment focused directly on this point: "I suppose what would appeal to me is an all-in-one application combining [keyword] research, organization and reporting" (Web survey short answer comment). Several participants offered similar thoughts on how integration can create a tool which follows their SEO workflow:

In my view, the main issue with SEO software is what kind of data is being mined in the first place. Cross-referencing and overlaying data from various [areas] is something very few tools do. For example, out of my specific competitors, show me sites that have the highest frequency of this keyword repeated in Titles. Show me the titles. How many words per page on each of those? There is no software that I am aware of that does this type of mining properly. (Web survey long answer response)
and

1) Focus on a really user friendly way to research keywords, evaluate them for relevancy and competitiveness, and then organize them into a navigation structure for either a single website or multiple microsites.

2) Include a feature that automatically optimized your Page titles and H1's.

3) Include the capability to update how the software optimizes Page Title’s and H1’s based on changes to the Google Algorithms.(Web survey long answer response)

These responses suggest some participants would benefit from SEO tools which are designed to fit within their workflow, using integration as a means to meet this objective.

Verbose and opinionated responses like these also highlight the SEO tool needs of SEO specialists. Many of the responses to open ended short answer questions discussed how no SEO tools currently meet their expectations, pointing out a gap between their needs and SEO tools available. All participants who took part in semi-structured interviews discussed how SEO tools can be improved by integrating positive aspects of disparate tools into a single unified workflow.

**SEO is often part of a larger integrated marketing effort**

Generally, all participants commented on their belief that SEO is often part of a larger web marketing effort:

*It would be great if you could combine some existing tools which are all scattered around. Some companies add tools that do this, some companies offer tools that do that. If we had a tool that could combine*
the most important aspects of SEO, SEM and social media into one place, I think that would be a dream coming true for internet marketers like me. I think [it would be] extremely important [tool] to have. (Semi-structured interview comment)

During discussions, participants revealed several additional opportunities for integration which were not discussed in the web survey. Opportunities included integrating functionality in traditional SEO tools with conversion information:

Keyword research is typically done separate from reporting. [Some tools] had hooks into one [tool] from another, and they had these sort of affiliate relationships with each other, but there wasn’t really a nice integration. WebTrends kind of came and went with WebPosition, but it would be nice to see integration of keyword research, position reporting, and actual web traffic. That would be fantastic. (Semi-structured interview comment)

This comment aligns with findings from the web survey regarding opportunities for integration. The greatest opportunities for integration may involve integrating traditional SEO tool functionality (such as keyword research and reporting) with conversion analytics. One participant offered a powerful example of how this could be accomplished:

The one thing I said a long time ago is not in any of the tools we discussed; it’s your actual web metrics. It’s nice to know that a term gets 8000 searches a month in Google. It’s nice to know you [rank] #4. It’s even better to know 500 [of those] people came to your site.
Attach a value to a certain web-action [or conversion] then you can see what value your position is worth in dollar terms, but also what a change in position would be worth. Over time you may be able to track these things and find the difference in conversion action dollars is X.

(Semi-structured interview comment)

The sort of approach outlined in the above quote would be useful for determining return on investment for SEO work and aid SEO specialists in forecasting how SEO projects will impact a client’s bottom line. No participant offered examples of existing tools with this functionality, but two participants believed data currently exists which would make this type of tool a theoretical possibility.

An additional avenue for integration focused on social media tracking. Participant comments suggested social media tracking for SEO can be improved:

I think SEO and social media have moved along parallel tracks and there is a real question in my mind about quantifying the value of social opportunities. Maybe this goes back to [a] link scoring idea, but there’s the traffic that comes from the social site and then there’s the links. How does a link from dig compare to a link from Twitter, compared to a link from Reddit. People are short sighted about social medial. It would be nice to marry somehow to marry the data between search and social.(Semi-structured interview comment)

And,

There’s no software right now that incorporates social media links or users. I always have to do a separate report [to find out] how many
fans I acquired this month, Likes, etc. It would be interesting to see SEO tools including these social media [metrics]. I have been spending a fair amount of time on social media; it’s a great place to build brand awareness and you can get lots of sales from social media.

(Semi-structured interview comment)

Social media remains a buzzword in the web marketing field. Social media and social tracking, such as Google’s “+1” and Facebook “Likes,” are beginning to be included in search algorithms. Finding opportunities to include social metrics alongside SEO information would provide SEO specialists with a powerful tool. Additionally, such a tool would provide information which appeals to clients or stakeholders who are interested in tracking social media campaigns.

4.5 Conclusion

Results from the web survey and semi-structured interviews provide insight into participant preferences and opinions regarding SEO tools. We can take away much from these results: all participants used at least two SEO tools as part of their SEO workflow; and accuracy is the primary shortcoming in today’s SEO tools. Participant comments suggested they believe shortcomings in SEO tools can be addressed through improved tool design.

With this in mind, participants offered many opportunities for integration to improve SEO tools. They believed data and functionality provided by keyword research and reporting and monitoring tools have opportunities for better integration. Participants also believed opportunities for integration between SEO tools and web analytic or social media tracking tools would create powerful new SEO tools. All participants who took
part in follow-up interviewed discussed the growing role of social media in SEO and discussed how clients often look for social media metrics as part of SEO reports. Integration between SEO tools and web analytic information offer a wealth of opportunity for provide business intelligence. A handful of participants discussed how quantifying the value of SEO to a client is often difficult. Offering an improved tool to determine how SEO impacts conversions (and ultimately revenue) will offer SEO specialists a method to quantify the value of each keyword ranking and allow clients to compute return on investment for SEO initiatives.
5 Conclusions and Future Work

In this chapter, we discuss the implications of our research findings on SEO tool development (Section 5.1), review the research methodology carried out in this research (Section 5.2), and discuss avenues for future work (Section 5.3).

5.1 Implications for SEO Tool Development

SEO tools are a very important part of SEO and allow SEO specialists to work for multiple clients or websites. The need to carry out SEO has led to the creation of tools providing information, analysis and recommendations to SEO specialists. Even with a rich tapestry of SEO tools, there is much room for improvement.

5.1.1 Gaps in SEO tools and shortcomings in Accuracy

Participant responses reveal concerns regarding gaps in accuracy, functionality, ease of use and integration with other SEO tools or business productivity software (i.e., Excel). Comments from participants offer explicit suggestions on improving SEO tools through improved integration.

The biggest shortcoming in SEO tools is accuracy, as discussed in Section 4.3. Participants responses suggest there are shortcomings in SEO tool accuracy because tools are unable to keep up with the pace of search engine algorithm changes and because tools do not have reliable sources of relevant data.

The issue of search algorithms outpacing SEO tools is one which can only be alleviated by proactive tool developers. Search engines are in a constant state of change – adding new search features, changing how search results are displayed and, most importantly, updating their search ranking algorithms. In order for a tool to be successful
its developers must remain focused on the evolving world of SEO and ensure tools are as up to date as possible.

The findings from this research suggest integrating SEO functionality and data offers many opportunities to improve SEO tool accuracy. APIs offered by Google AdWords, WordTracker, or SEOmoz can be made to work together to collect multiple data points for a single metric, such as keyword search volume. This will allow for improved cross-referencing and amalgamation of data in a tool. Improving the richness of the data which powers SEO tools will help alleviate issues in accuracy.

5.1.2 Improve SEO tool functionality
Functionality was identified as a secondary shortcoming in SEO tools, behind accuracy. Participants believe functionality from link analysis and page optimization tools would be worthwhile to include in an integrated SEO tool. The previous paragraph discussed integrating data sources within a single area of SEO to achieve greater accuracy. Integrating data sources and functionality across several areas of SEO, such as keyword research and reporting, will create a tool with richer functionality. As an example, integrating keyword search volume information with competitor search ranking information would allow for deeper analysis of a keyword's organic search competitiveness in the keyword research phase. Participants were also cautious of over-integration, suggesting integration would improve SEO tools but SEO tools should not try to do everything. Integrating the functionality from many areas of SEO should be done with the goal of providing improved information or an improved user experience rather than creating a tool which can “do everything.”
5.1.3  Provide an export process in a portable file format

A relatively simple aspect of how SEO tools can use integration to better match SEO specialist’s workflow and improve user experience is data export. SEO tools should allow data from the tool to be exported in appropriate logical chunks using a highly portable format. Including a mechanism to allow data to be exported using a platform-independent format, such as CSV, would be appropriate for most SEO specialists. Participants often manipulate SEO data further outside of an SEO tool to create custom reports for clients or perform further analysis. Making the process of sharing data between SEO tools and other applications as simple and efficient as possible should be a core design consideration when developing SEO tools.

5.1.4  Track conversions alongside SEO metrics

As the field of web marketing analytics continues to mature, SEO tools must maintain ever expanding analysis capabilities in order to meet the needs of SEO specialists. The most powerful opportunities for integration offered by participants focus on integrating conversion analytics with SEO tools. In my experience as an SEO specialist, one of the most difficult questions a client can ask is how SEO will impact conversions and their overall revenue. Combining aspects of SEO reporting tools with information about website visits or conversion tracking would provide SEO specialists with a powerful business intelligence tool. Conversion and web traffic can be tracked using solutions such as Google Analytics, WebTrends or Eloqua. Each of these tools offer APIs or export functionality which would allow this data to be included in a SEO tool. Integrating data and functionality will allow SEO tools to meet or exceed SEO specialists principal expectations while alleviating the main shortcomings which exist in today's SEO tools.
5.2 Review of Research Methodology

In this section we present a review of our research methodology. Section 5.2.1 looks at improving recruiting. For future researchers who wish to expand on this research, Section 5.3 discusses next steps and considerations for additional complementary studies.

5.2.1 Improvements in recruitment

For researchers who wish to conduct a similar study in the future, there are several opportunities for improvement in methodology. The primary areas where improvements can be made fall under the recruiting umbrella. Future researchers should attempt to partner with SEO communities, schedule follow up interviews immediately and prominently display academic or other affiliations.

**Partner with SEO communities**

For this study we approached a handful of SEO forums and community websites with a reach of several thousand SEO specialists. Additionally, one of the community managers Tweeted a link to the survey through his Twitter account, which is followed by over 1000 SEO specialists. Less than 5 of the 27 participants from this study were recruited from SEO communities, despite having the study promoted to thousands of SEO specialists. For future studies, it would be beneficial to partner with a single or handful of SEO communities to promote the study. The communities we approached were receptive to posting a message or forum post about this study, however partnering with a SEO community will likely entice more community members to take part in the study.
Schedule follow-up interviews immediately

When contacting participants for semi-structured follow up interviews, only three participants were willing or able to meet with us. Due to the researcher’s other obligations, follow up interviews were conducted two to three months after the web survey was closed. Allowing this much time to pass between the survey and approaching participants for follow up interviews may be responsible for the limited number of follow up interviews we were able to conduct. Additionally, the whole of this study was conducted from April-August, 2011 – a time when many individuals are taking vacation. Two of the three participants who took part in follow up interviews needed to schedule the interviews around their vacation time. For these reasons, future researchers should attempt to conduct follow up interviews as soon as possible with participants and plan to launch studies during non-holiday periods.

Create recruiting materials focusing on the academic nature of the study

SEO specialists are typically sent emails under the guise of “SEO studies” with the real intention to market products or services. This shady tactic may crowd out academic studies which have the goal of learning and understanding rather than promoting a product or service. For this reason it is very important to ensure any forum posts, e-mails, surveys or other materials presented to potential participants clearly indicate the study’s academic nature and university affiliation. Despite recruiting from global SEO forums or communities and approaching SEO firms from across North America and England, the vast majority of participants who took part in this study hail from Canada. While the location of the SEO does not impact the results of our study, one possible reason why
more Canadians took part in this study may be because the University of Guelph name means more to Canadians.

When sending “cold emails” to SEO firms, two participants commented about their willingness to take part in this study because they are a Guelph alumni or they trust the University of Guelph’s reputation. Prominently including information about the affiliation of the researcher to academic institutions or SEO communities will help to build trust with the potential participant and entice them to take part in the study.

5.3 Expanding on this work

The scope of this study is designed to investigate user opinions regarding SEO tools to determine avenues for improvement. At the time of writing, there is limited information available regarding user preferences for SEO tools and SEO specialists as a user class. This comes at a time where many tool options are available to SEO specialists. For this reason, the scope of this study looks broadly at SEO tools rather than focusing on a handful of specific tools. Future research should narrow its focus to a handful of tools and review them with users who have varying levels of the experience with the subject tools. Usability testing is ideally suited to this research, conducting the session in person or remotely through web conferencing software, such as Cisco WebEx.

From informal SEO tool reviews performed by the researcher, one tool in particular stood out as representing the ideas and opinions participants brought forward. Raven SEO Tools integrates data from multiple sources and provides some functionality which cross boundaries between keyword research and reporting tools. Future researchers should examine this tool further to determine whether it addresses some of the issues brought forward by participants of this study.
5.3.1 Considerations for developing SEO tools

The goal of user experience research is to identify opportunities to create or improve software. While we did not create SEO tools as part of this research, these findings pave the way for future user centered design studies undertaken with the goal of creating new SEO tools. Investigating user preferences and opinions surrounding SEO tools will determine how to effectively create a SEO tool to better meet the needs of SEO specialists. Including user centered design methodologies in the SEO tool design process will be of great benefit to both tool makers and SEO specialists as a user class.

*Include SEO specialists in user centered design*

This research reveals SEO specialists as an opinionated group who are often eager to share their opinions regarding SEO tools. SEO specialists as a user class benefit from SEO tools which align with their workflow and enhance their ability to do work. This aligns with the researcher’s empirical findings from informally interacting with SEO specialists during the course of this research or in a professional or personal environment. Participant comments also reveal much dissatisfaction with existing SEO tools, suggesting there is a great deal of improvements which can be made in order to create SEO tools which better meet the needs of SEO specialists.

When reaching out to SEO specialists, it is important to understand how highly they value their time. SEO specialists are approached very often to take part in surveys or SEO tool testing as part of a marketing campaign. Since the focus of this study is purely academic, approaching SEO specialists individually was much more successful than any other mass-recruiting avenue. Explaining the study’s purpose, the academic nature of the study and the limited time commitment the study requires was the best means for
recruitment. Many participants we contacted want to take part in academic studies like this, however they are suspicious of surveys and study whose true purpose is to sell a product or service. Future researchers should keep this in mind when recruiting and ensure every effort is made to portray the study as an academic initiative.

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doi:10.1145/503376.503460


doi:10.1016/j.im.2004.03.001


Appendicies

**Appendix A – Methods**

*Methed for investigating SEO tools*

Looking at methodologies successfully used to study other software fields will help determine the methodology for our study. When examining software usability and user preferences and opinions, researchers have a variety of methods at their disposal, each
with its own advantages and disadvantages. Understanding these variations will support the crafting of the methodology for this study. Below are three of the most commonly used user-centered design methodologies:

1. User satisfaction surveys
2. Heuristic evaluation
3. Usability testing.

Each of these methodologies has been successfully applied to software evaluation research. For example, Zviran et al. used a web-based survey to look at how website usability impacts customer satisfaction (Zviran, Glezer, & Avni, 2006). In 2011, Jaferian et al. looked into heuristic evaluation for IT security management tools in order to define heuristics for IT security software. Usability testing was used by Hossain & Masud's to address usability issues in a geographic information system (Hossain & Masud, 2009). The following discusses these methodologies in further detail.

**User satisfaction survey**

A 2002 survey of 103 usability professionals attending CHI'2000 examined the strengths and weaknesses of competing user-centered design practices (Vredenburg, Mao, Smith, & Carey, 2002). Surveys have the advantage of reaching a large number of respondents with relatively low overhead compared to other competing methodologies. In addition, surveys allow researchers to collect information in a fraction of the time required for other methodologies, e.g., usability testing and one-on-one interviews. While there are many strengths to using surveys, Vredenburg et al.’s (2002) found credibility of participants and quality of results are potential pitfalls when conducting surveys. To
overcome this, special attention must be given to both the selection of participants for a survey and the type of questions asked.

Online surveys (AKA web surveys) have many advantages over paper surveys, including lower cost per participant, faster response time, and the ability to target audience anywhere in the world (Ahn, Ryu, & Han, 2007). This makes web surveys a viable method for reaching geographically disparate participants. Web surveys have been employed in research on topics such as determining web portal service quality (Yang, Cai, Zhou, & Zhou, 2005), and user satisfaction from commercial web sites (Zviran et al., 2006).

In 2006, researchers from the Technical University of Crete created a web survey to measure user satisfaction, building on the MUSA (MUlticriteria Satisfaction Analysis) method for customer benchmarking analysis (Grigoroudis, Litos, Moustakis, Politis, & Tsironis, 2008). Their research measured customer satisfaction quantitatively by investigating qualitative and qualitative measures to determine customer satisfaction. Researchers created a survey allowing qualitative and quantitative measures to exist as part of the same survey instrument, which underscores the versatility of surveys in user-centered research.

Previous research by Zviran et al. combined user satisfaction and user-centered design constructs into a single unified survey in order to determine how design impacts user satisfaction (Zviran et al., 2006). The researchers expanded on Doll, Xiz and Torkzadeh’s (1994) instrument for measuring customer satisfaction, adding several questions to address web usability pitfalls. As a result, their surveys were able to measure user satisfaction and web usability.
Heuristic Evaluation

Heuristic evaluation is a method for reviewing software interfaces to determine how usable a system is and to identify usability pitfalls within the system (Nielsen & Molich, 1990). This evaluation is typically done by expert reviewers who review the system based on a set of heuristics, such as Nielsen's 10 Usability Heuristics (Nielsen, 1994). A reviewer judges the software using the heuristics as a guide, performing a series of tasks; recording what aligns well with the heuristics and opportunities for improvement.

Vredenburg et al.’s (2002) study studied heuristic evaluation along with several other competing methodologies to researching software usability (Vredenburg et al., 2002). The researchers found heuristic evaluation's low cost and speedy turnaround time were its biggest strengths. Two major drawbacks for heuristic evaluation were found: the lack of user involvement in the evaluation process; and the availability of suitable experts to conduct the evaluation. When asked about validity and quality of results, the Vredenburg et al found participants were mixed in their opinions. Of the 16 participants who addressed heuristic evaluation's validity and quality of results, 10 participants felt heuristic evaluation may deliver less valid or lower quality results compared to other competing usability methodologies, such as focus groups or usability testing. In contrast, only 6 participants felt heuristic evaluation provided a higher level of validity compared to other competing methodologies, suggesting expert reviewers are be better at identifying usability gaps than users.

Because heuristic evaluation does not include users in the review process and is performed by expert evaluators, heuristic evaluation can be done very quickly by a small group of evaluators. However, for our study, SEO specialists must be included in this
research project to provide valid results. In addition, there is limited information available about SEO specialists as a user class. As a consequence, the result of a heuristic evaluation would be difficult to interpret, i.e., determining which results are the most important would be problematic without a good understanding of SEO specialists. To learn more about their SEO tool opinions and preferences, SEO specialists must be included in our study. In future research, heuristic review may be a worthwhile exercise to undertake as part of a design process for creating or improving SEO tools.

**Usability testing**

There is no substitute for being able to put an interface in front of real users as ask them to provide open, honest feedback. During a usability test, participants are asked to perform tasks, assess a system’s usability, and provide feedback to a test’s facilitator (Rubin & Chisnell, 2008). This practice is considered by many to be a primary user-centered design methodology (Vredenburg et al., 2002). Vredenburg et al.’s (2002) study looked at usability testing alongside surveys, heuristic evaluation and several other common user-centered design techniques. They found usability testing yields highly quality results compared to other user centered design methodologies. Usability testing also provides a wealth of contextual information which can be analyzed to determine proper context for findings (Vredenburg et al., 2002). The major drawbacks of usability testing are the time and cost required to perform a usability test. Usability tests require an expert facilitator and a participant to sit down together to complete a session. This adds a layer of complexity not present in either web surveys or heuristic evaluation, however the quality of the results often justify the increase in complexity. Typical usability testing include users into a laboratory setting,
with a researcher asking a participant to look at an interface, perform tasks, and discuss strengths, weaknesses, and overall opinions about the subject user interface. As this research is exploratory in nature and no software tools have been created to build a usability test around, usability testing would not deliver the sort of insight this research looks to achieve. Additionally, the complexity of finding suitable participants, as well as a suitable time and location to perform the session, makes usability testing an untenable option and thus a much less attractive option than a web survey.

**Selection of Methods**

Three prominent user centered design methodologies were discussed in this section: online surveys, heuristic evaluation, and usability testing. Both heuristic evaluation and usability testing are methods for exploring user experience by looking at specific software tools. These methods determine usability shortcomings through evaluation by expert evaluators or by having an expert facilitator work through an interface one-on-one with a participant. Web surveys, on the other hand, provide an opportunity to reach a large group of geographically disparate users of heterogeneous tool sets, something that would be unthinkable with either heuristic evaluation or user testing. Additionally, a short web survey requires far less of a participant's time than usability testing nor does it require expert evaluators or facilitators. As a result, the likelihood of engaging suitable participants is much higher than the other two methods.
<table>
<thead>
<tr>
<th>Term/Tool</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy</td>
<td>How closely information within a SEO tool aligns with the “real world”. I.e., if a tool claims keyword X has 20,000 searches per month and the actual number of searches is 20,000, the tool shows a high level of accuracy. If a tool claims keyword X has 5,000 searches per month and the actual number of searches is 20,000, the tool shows a poor level of accuracy. Accuracy is often determined by manual spot-checks to verify data, however tool makers should strive to use automated means to benchmark their tools’ accuracy.</td>
</tr>
<tr>
<td>Anchor text (AKA link anchor text)</td>
<td>The clickable text area of a link.</td>
</tr>
<tr>
<td>Click or clickthrough</td>
<td>When a user clicks on a search result and visits a target website.</td>
</tr>
<tr>
<td>Cost-Per-Click bidding</td>
<td>The amount of money an advertiser is willing to pay for each click of a sponsored/paid search result for a specific keyword.</td>
</tr>
<tr>
<td>Inbound links</td>
<td>Hypertext links which send a user from a third-party website to a target website.</td>
</tr>
<tr>
<td>Keyword research</td>
<td>The process of investigating and selecting keywords to include in an SEO project.</td>
</tr>
<tr>
<td>Keyword Visibility Index (KVI)</td>
<td>The KVI is a metric computed to determine visibility for a subject website for a set of keywords. This metric works by assigning each keyword a value between, k, where k[i]=(n+1)-r, where n=the total number of rankings (typically 30) and r=the ranking of the subject website for the given keyword. KVI can be computed using the following formula: (∑k[i])/n*total_keywords</td>
</tr>
<tr>
<td>Keywords</td>
<td>Core words or phrases used by searchers; often used as slang to mean “search query” but keywords are a subset of search queries</td>
</tr>
<tr>
<td>Link building</td>
<td>The process of finding other websites which will create links which point to a target website.</td>
</tr>
<tr>
<td>Links</td>
<td>See “Inbound links”</td>
</tr>
<tr>
<td>Long tailed keywords</td>
<td>Keywords containing between two and five words which are highly reflective of a website’s content. These keywords typically have lower search volume but deliver higher quality search traffic.</td>
</tr>
<tr>
<td>Monthly search volume</td>
<td>The number of searchers who search for a selected keyword or phrase in a single month.</td>
</tr>
<tr>
<td>Organic search results</td>
<td>Non-paid search results which are returned by a search engine for a specific search query.</td>
</tr>
<tr>
<td>Page optimization (AKA on-page optimization)</td>
<td>The process of creating or updating web pages to align with SEO goals. Typical tasks include updating a page’s copy, updating meta tags (title, description), and making updates to HTML, JavaScript or CSS.</td>
</tr>
<tr>
<td>Paid search results</td>
<td>Paid advertisements in the form of search results which are displayed for a specific search query.</td>
</tr>
<tr>
<td>Pay-Per-Click (PPC)</td>
<td>A type of paid search bidding model which allows advertisers to place a bid for each click their advertisement receives. The advertiser with the highest bids will have their ads displayed on the search engine results page.</td>
</tr>
<tr>
<td>Reporting and monitoring</td>
<td>The process of gathering information about a website’s search visibility in order to determine successes and opportunities for</td>
</tr>
</tbody>
</table>
improvement.

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Search engine</td>
<td>A website which allows users to find websites relevant to a search query.</td>
</tr>
<tr>
<td>Search Engine Optimization (SEO)</td>
<td>The process of improving the visibility of a website in organic search</td>
</tr>
<tr>
<td></td>
<td>results for search terms which are relevant to the website’s target audience. The goal is to draw users to a target website through search results.</td>
</tr>
<tr>
<td>Search Engine Results Page (SERP)</td>
<td>A set of organic and paid search results presented by a search engine for a specific search query.</td>
</tr>
<tr>
<td>Search query</td>
<td>A meaningful string of words and phrases entered into a search engine by a user</td>
</tr>
<tr>
<td>Search traffic</td>
<td>Web visitors who arrive at a subject website through search engines.</td>
</tr>
<tr>
<td>Search visibility</td>
<td>The extent to which a website can be found in Search Engine Results Pages (SERPs) for a selected set of keywords.</td>
</tr>
<tr>
<td>Sponsored search results</td>
<td>See “paid search results”</td>
</tr>
</tbody>
</table>

**Appendix C – Glossary of Selected SEO Tools**

The following list represents SEO tools selected or discussed by participants during the study.

<table>
<thead>
<tr>
<th>Tool</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Web Ranking</td>
<td>Keyword research and search engine ranking tools.</td>
</tr>
<tr>
<td></td>
<td>Advanced Web Ranking</td>
</tr>
<tr>
<td>Alexa</td>
<td>Third-party web analytic and visitor trend monitoring tools.</td>
</tr>
<tr>
<td></td>
<td>Alexa</td>
</tr>
<tr>
<td>BuzzStream</td>
<td>Link building and social media monitoring tools.</td>
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<tr>
<td></td>
<td>BuzzStream</td>
</tr>
<tr>
<td>Compete</td>
<td>Third party web analytic and visitor trend monitoring tools.</td>
</tr>
<tr>
<td></td>
<td>Compete</td>
</tr>
<tr>
<td>Google AdWords Keyword Tool</td>
<td>A keyword research tool offered by Google which provides keyword search volumes as well as several other paid search metrics. Offered as a service.</td>
</tr>
<tr>
<td></td>
<td>Google AdWords: Keyword Tool</td>
</tr>
<tr>
<td>Google Analytics</td>
<td>Conversion tracking, web analytic and visitor trend monitoring tools.</td>
</tr>
<tr>
<td></td>
<td>Google Analytics</td>
</tr>
<tr>
<td>HubSpot</td>
<td>“All-in-one” marketing tool which offers tracking for SEO, social media and visitor trending.</td>
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<tr>
<td></td>
<td>HubSpot</td>
</tr>
<tr>
<td>iBusiness Promoter</td>
<td>Backlink and search engine ranking monitoring software. Also creates SEO reports.</td>
</tr>
<tr>
<td></td>
<td>iBusinessPromoter</td>
</tr>
<tr>
<td>Keyword Snatcher</td>
<td>A keyword research tool for finding niche markets.</td>
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<td></td>
<td>Keyword Snatcher</td>
</tr>
<tr>
<td>Keyword Spy</td>
<td>Keyword spy is a paid keyword research and competitive intelligence tool which offers integration with Google AdWords.</td>
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<td></td>
<td>Keyword Spy</td>
</tr>
<tr>
<td>Tool Name</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Linkdex</td>
<td>Primarily a link building tool which can integrate with a content rights management system to provide additional analytics. Also performs competitor link analysis.</td>
</tr>
<tr>
<td>Market Samurai</td>
<td>Market Samurai is a paid keyword analysis tool designed to help marketers find keyword keywords which will drive high volume traffic to their website.</td>
</tr>
<tr>
<td>PostRank</td>
<td>Social media tracking tools; useful to determine trends and opinions.</td>
</tr>
<tr>
<td>Rank Tracker</td>
<td>A reporting and monitoring tool to track search rankings in leading search engines.</td>
</tr>
<tr>
<td>Raven SEO Tools</td>
<td>Raven SEO Tools offer keyword research and reporting functionality through a web interface. This tool does a very good job integrating data from multiple sources.</td>
</tr>
<tr>
<td>Scrapebox</td>
<td>A tool for finding possible link opportunities using online scrapers.</td>
</tr>
<tr>
<td>SEOBook Keyword Density Analyzer</td>
<td>A page optimization tool which determines which keywords are being targeted by a subject page (target website or competitor). Offered as a web service.</td>
</tr>
<tr>
<td>SEOBook Reporting Tools</td>
<td>A series of tools to aid in reporting and monitoring of SEO campaigns. Offered as FireFox extensions.</td>
</tr>
<tr>
<td>SEOmoz tools</td>
<td>A series of keyword research, page optimization, link building, and reporting &amp; monitoring tools. Offered as a web service or as browser plugins.</td>
</tr>
<tr>
<td>SerpAttacks</td>
<td>SEO reporting tool which finds information on top rankings and backlinks.</td>
</tr>
<tr>
<td>Social Mention</td>
<td>Social media search engine which searches user-generated content.</td>
</tr>
<tr>
<td>SpyFu</td>
<td>A keyword research tool designed to learn about, or “spy”, on competitor keywords.</td>
</tr>
<tr>
<td>WebCEO</td>
<td>A series of tools to aid in keyword research, page optimization, and reporting &amp; monitoring. Offered as both downloadable desktop software or as a web service.</td>
</tr>
<tr>
<td>WebPosition</td>
<td>Reporting and monitoring software which tracks organic and paid search rankings for target and competitor websites. Previously offered as downloadable software, WebPosition is now offered as a web service.</td>
</tr>
<tr>
<td>Webtrends</td>
<td>Server-side web analytic and visitor trend monitoring tools.</td>
</tr>
</tbody>
</table>
Whitespark Local Citation Finder
A keyword research or link building tool which helps SEOs find websites which offer citations, reviews or links for local SEO activities.
[Whitespark Local Citation Finder]

Wordstream
A keyword research tool primarily focused on paid search marketing, however they offer a free keyword tool which shows relative search volumes.
[wordstream]

WordTracker
A suite of keyword research, link building and SEO campaign management tools. Offered as a web service.
[wordtracker]

Yahoo! Search Marketing/Overture
Keyword research tools offered by Yahoo! during the early days of SEO. Overture is no defunct and the Yahoo! Search Marketing platform has been redeveloped as Yahoo! Advertising Solutions to act as a competitor to Google AdWords.
[Yahoo! Advertising Solutions (Successor to YSM/Overture)]

Yahoo! Web Analytics
A service similar to Google Analytics which tracks web analytic and visitor trending information.
[Yahoo! Web Analytics]

Appendix D – Recruitment Materials

Direct e-mail to potential participants

Subject: Participation in SEO research study (or something personalized based on previous contact with potential participants)

Hi [Name],

My name is Dave McVittie and I'm a graduate student and researcher from the School of Computer Science at the University of Guelph, located in Guelph, Ontario, Canada. My research focus is on how software is used by Search Engine Optimization (SEO) professionals, more specifically, understanding how software can be developed or enhanced to improve SEO workflows. I'm writing you today in hopes that you can spare a few minutes of your time to participate in this study.

As part of our research we have created a short web survey for SEO professionals. We are looking to better understand how software can be developed to better support SEO
processes and workflows. The multiple choice and short answer survey will take less than 20 minutes for most participants to complete.

As an incentive, a randomly selected participant will receive an E-Reader (winners choice, approximate value: $200 USD, chances of winning are approximately 1 in 40) upon completion of the study. We're looking for participants who have engaged in SEO activities within the last 3 years and have used at least 1 SEO-focused software tool as part of these activities.

If you meet these criteria and would like to take part in the study, please follow the link below and you can take the survey at your leisure. Any questions can be directed to me, or to the project supervisor, Dr Blair Nonnecke.

[Link to study]

Thanks for your time,

Dave McVittie
dmcvitti@uoguelph.ca
(613) 618-2833
M.Sc. Candidate
School of Computer Science
University of Guelph

Blair Nonnecke, PhD
nonnecke@uoguelph.ca
(519) 824-4120 Ext. 56407
Associate Professor
Email/private forum message to community owner/leader/moderator

Email/Message title: Request for Participants for Academic Research

Hi [Moderator/Administrator Name],

My name is Dave McVittie and I'm a graduate student and researcher from the School of Computer Science at the University of Guelph, located in Guelph, Ontario, Canada. My research focus is on how software is used by Search Engine Optimization (SEO) professionals.

As part of this research we have created a short web survey for SEO professionals. We are looking to better understand how software can be developed to better support SEO processes and workflows. I'm hoping to attract participants to this study from your [forums or message board or blog] by creating a post with which informs users about the study and provides a link to take the survey.

The multiple choice and short answer survey will take less than 20 minutes for most participants to complete. There is no risk or discomfort to participants who take the survey, and participants will be offered the opportunity to review the research findings upon publication.

As an incentive for participants, an E-Reader (winners choice, approximate value: $200 USD, chances of winning are approximately 1 in 40) will be given to a randomly selected
participant upon completion of the study. To be eligible for the study, participants must be knowledgeable in the world of SEO, preferably a practitioner, and have used at least 1 SEO-focused software tool.

This research project is undertaken as part my Master's thesis, which is done under the supervision of Dr. Blair Nonnecke. I'm very interested in promoting this survey within your community, so please let me know if you are willing to support this endeavor as well as any questions or concerns you may have. My contact information, along with Blair’s, can be found below.

Thanks for your time and consideration,

Dave McVittie
dmcvitti@uoguelph.ca
(613) 618-2833
M.Sc. Candidate
School of Computer Science
University of Guelph

Blair Nonnecke, PhD
nonnecke@uoguelph.ca
(519) 824-4120 Ext. 56407
Associate Professor
School of Computer Science
University of Guelph
Hi everyone,

Thanks to [Administrator/Moderator who granted permission] for letting me post this here.

My name is Dave and I'm a graduate student and researcher from the School of Computer Science at the University of Guelph, located in Guelph, Ontario, Canada. My research focus is on how software is used by Search Engine Optimization (SEO) professionals. As part of that research we have created a short web survey for SEO professionals. We are looking to better understand how software can be developed to better support SEO processes and workflows. The multiple choice and short answer survey will take less than 20 minutes for most participants to complete.

As an incentive, a randomly selected participant will receive an E-Reader (winners choice, approximate value: $200 USD, chances of winning are approximately 1 in 40) upon completion of the study. We're looking for participants who have engaged in SEO activities within the last 3 years and have used at least 1 SEO-focused software tool as part of these activities.
If you meet these criteria and would like to take part in the study, please follow the link below and you can take the survey at your leisure. Any questions can be directed to vanity_email [at] uoguelph [dot] ca.

[Link to study]

Thanks for your time,

Dave McVittie

Appendix E – Web Survey Questions

*SEO Tools Research Survey*

________________________________________

Consent to Participate in Research

CONSENT TO PARTICIPATE IN ACADEMIC RESEARCH

The Role of Software in Search Engine Optimization (SEO): web survey

You are asked to participate in a research study conducted by Blair Nonnecke and David McVittie, from the School of Computer Science department at the University of Guelph. The results will be contributed to the Master's thesis of David McVittie.

If you have any questions or concerns about the research, please feel free to contact Blair Nonnecke by telephone at (519) 824 – 4120 ext 56403 or by email at nonnecke@uoguelph.ca.
PURPOSE OF THE STUDY

The purpose of this study is to gather information about current practices regarding the use software to aid in search engine optimization (SEO). This study will create use this information to aid in the creation of prototype software designed to cater to SEO's workflow and processes.

PROCEDURES

If you volunteer to participate in this study, we would ask you to do the following things:

You will be asked a series of questions relating to your experience as a search engine optimization professional and the role of software in your process. Once the study is completed, all participants will have access to the results as provided by the researchers.

POTENTIAL RISKS AND DISCOMFORTS

There are no reasonably foreseeable risks, discomforts, inconveniences associated with completing this study's web survey.

Participants may withdraw from the study at any time by exiting the survey prior to completing it.
POTENTIAL BENEFITS TO PARTICIPANTS AND/OR TO SOCIETY

Once the results of the study are reported, participants will benefit by learning about how search engine optimization software can streamline SEO processes further.

As a whole, the search engine optimization community will gain an understanding of how integrated SEO software systems can improve the SEO process, decreasing time invested in performing SEO tasks.

PAYMENT FOR PARTICIPATION

There will be a lottery-based incentive (An E-Reader; approximate value $200, chances of winning are approximately 1 in 40) for participants who complete the web survey. The winning participant will be contacted via e-mail to discuss delivery of their prize.

CONFIDENTIALITY

Every effort will be made to ensure confidentiality of any identifying information that is obtained in connection with this study.
All data collected during the course of the study will remain confidential. During the study, the data will be stored securely in the School of Computer Science department at the University of Guelph. Once the study is completed, the data will be destroyed.

Participants and their affiliations will not be connected to any data collected or published.

However, data collected during this study will not be anonymous. Verbatim quotes from participants will be used to provide support for research findings.

Data collected during this study will be aggregated or stripped of any identifying information prior to being discussed.

PARTICIPATION AND WITHDRAWAL

You can choose whether to be in this study or not. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind. You may exercise the option of removing your data from the study. You may also refuse to answer any questions you don't want to answer and still remain in the study. The investigator may withdraw you from this research if circumstances arise that warrant doing so.

RIGHTS OF RESEARCH PARTICIPANTS
You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this research study. This study has been reviewed and received ethics clearance through the University of Guelph Research Ethics Board. If you have questions regarding your rights as a research participant, contact:

Research Ethics Coordinator  Telephone: (519) 824-4120, ext. 56606
University of Guelph  E-mail: sauld@uoguelph.ca
437 University Centre Fax: (519) 821-5236
Guelph, ON N1G 2W1

Please take a moment to print or save this webpage to retain a copy of this consent form.

I have read the information provided for the study "The Role of Software in Search Engine Optimization (SEO)" as described herein. Any questions have been answered to my satisfaction, and I agree to participate in this study.*

( ) Yes
( ) No

______________________________

Introduction

Getting Started
Please provide us with an e-mail address to contact you at if you are the winner if the E-Reader. This information will only be used to contact you if you are the winner of the E-Reader.

If this is left blank you will NOT be eligible for the draw.

To ensure robots to do not take this survey, please type the word "SEO" in the box below:*  
__________________________________________

__________________________________________

**Robot Check**

To ensure robots to do not take this survey, please type the word SEO in the box below:*  
The code entered was invalid! Please enter "SEO" in the box below.

__________________________________________

__________________________________________

**Background**

1) How long have you been involved in the field of search engine optimization (SEO)?*  

( ) Less than 1 year

( ) 1-3 years

( ) 3 years or more
2) In total, how many SEO-specific software applications do you use?*

(This count does not include tools like Internet Explorer, Firefox, Microsoft Word, Excel, etc which were not developed for SEO professionals)

( ) 1
( ) 2-3
( ) 4-5
( ) 6 or more

3) Who do your SEO clients include? (Please select all that apply)*

[ ] Your own personal website(s)
[ ] Your company's website (On-staff SEO)
[ ] Your company's clients (Agency)
[ ] You Freelance your services
[ ] Other (Please Specify)

4) Thinking about your SEO projects over the last 3 years, please indicate the types of industries you have optimized websites for: (Please select all that apply)*

[ ] Personal website(s)
[ ] E-commerce website(s)
[ ] Corporate website(s)
[ ] Product information website(s)
[ ] Online service or app
[ ] Community website(s) (forums, etc)

[ ] Other: (Please Specify)

5) Thinking back to your previous SEO projects, what were your typical tasks?: (Please select all that apply)*

[ ] Keyword research

[ ] On-page or content optimization

[ ] Web development or technical page optimization

[ ] Link building

[ ] Monitoring and reporting

[ ] SEO strategy

[ ] Competitor analysis

[ ] Social media optimization

[ ] Other: (Please Specify)

________________________________________

SEO Data Migration

6) While performing SEO activities, do you typically need to copy keywords or lists of keywords from one application to additional SEO software applications?*

( ) Yes

( ) No

________________________________________
7) Please rank the following factors based on their importance when considering keywords to include in an SEO project:*

- Potential long tailed variants
- Existing search visibility for the target website
- Competitor rankings
- Keyword visibility index (or other similar metrics)
- Monthly search volume
- Brand relevance
- Relevance to target content

8) Thinking back to your previous SEO projects, what keyword research software have you used? (Please select all that apply)*

[ ] Google AdWords Keyword Tool
[ ] Yahoo! Search Marketing/Overture (now defunct)
[ ] Wordtracker
[ ] Wordstream
[ ] Market Samurai
[ ] Keyword Discovery
[ ] SEOmoz Keyword Tools
[ ] Other: (Please specify)
9) Please rank each of the following items based on its importance when using keyword research software:*

- Ease of use
- Accuracy
- Time invested/Efficiency
- Integration with other software
- Immediacy of results
- Ease of Access
- Functionality

10) What is the biggest shortcoming of existing keyword research software?*

- Ease of use
- Accuracy
- Time invested/Efficiency
- Integration with other software
- Immediacy of results
- Ease of Access
- Functionality
- Other: (Please specify): _________________

11) If you were designing keyword research software, what are the primary needs you would like the software to satisfy?
Examples: Cut down the time I spend performing keyword research, automate menial processes, output data in an easy-to-use format

12) Do you create reports for your SEO clients, stakeholders or for your own business intelligence?*

( ) Yes

( ) No

Monitoring and Reporting

SEO Reports

The following section focuses on SEO reports which are delivered to clients, stakeholders or for business intelligence.

These reports may include, but are not limited to:

• Search engine ranking reports

• Link intelligence reports

• Keyword intelligence reports

• Traffic intelligence reports

• Competitive analysis reports

13) How often do you typically generate or create SEO reports?*

( ) More than once per month
( ) Monthly

( ) Bi-monthly or quarterly

( ) Semi-yearly or longer

( ) Upon request only

14) Why do you create SEO reports as part of your SEO work? (Please select all that apply)*

[ ] To determine the success of an SEO campaign for stakeholders

[ ] To find areas which need additional work/improvements

[ ] To build a case for additional SEO work

[ ] To create business intelligence to stay ahead of competitors or as part of a larger SEO project

[ ] As part of a pitch to a prospective client

15) What type(s) of information do you typically include in your SEO reports? (Please select all that apply)*

[ ] Search rankings (target website)

[ ] Search rankings (competitor website(s))

[ ] Traffic metrics

[ ] Keyword search volume information

[ ] Inbound link information

[ ] Other: (Please specify)
16) Which of the following data sources do you typically look at when creating SEO reports? (Please select all that apply)*

[ ] Search engine results

[ ] Inbound links

[ ] Web analytics data (such as WebTrends or Google Analytics)

[ ] Third-party analytics (such as Alexa or Compete.com)

[ ] Competitive Analysis

[ ] Keyword Metrics

[ ] Other: (Please specify)

17) Thinking back to your previous or ongoing SEO projects, what software tools have you utilized when building SEO reports: (please select all that apply)*

[ ] Google Keyword Tools

[ ] Google Analytics

[ ] Wordtracker

[ ] SEOmoz

[ ] WebPosition

[ ] WebTrends

[ ] Alexa and/or Compete.com

[ ] Other: (Please specify)

18) Please rank each of the following item based on its importance when using SEO reporting software:*
19) What is the biggest shortcoming of existing SEO reporting software?*

( ) Ease of use
( ) Accuracy
( ) Time invested/Efficiency
( ) Integration with other software
( ) Immediacy of results
( ) Ease of Access
( ) Functionality

( ) Other: (Please specify): _________________

20) If you were designing SEO reporting software, what are the primary needs you would like the software to satisfy?*

Examples: Cut down the time I spend writing reports, automate menial processes, output data in an easy-to-use format
21) Do you have any other comments about how SEO software could be improved?  
(Optional)

22) Would you be interested in being interviewed as part of a follow-up to this web survey? If you select "no" you will not be contacted again as part of this study unless you are the winner of the e-reader.*

If you are interested in being part contacted for a follow-up interview, please include the e-mail address you would like us to contact you at.

( ) Yes (please enter the e-mail address): _________________

( ) No

Survey Complete!

Thank you for taking part in our research study!

Thank you for taking time out of your busy schedule to complete this survey. Upon completion of the study, the results will be posted at http://www.uoguelph.ca/~dmcvittie for participants of this study to review.

If you have any follow up questions, concerns or would like to contact the researchers, please use the contact information below:

Dave McVittie
dmcvitti@uoguelph.ca
M.Sc. Candidate
School of Computer Science
University of Guelph

Blair Nonnecke, PhD
nonnecke@uoguelph.ca
Associate Professor
School of Computer Science
University of Guelph

Appendix F – Full Web Survey Results
Please see the attached document – appendix_F_full_web_survey_results.csv.

Appendix G – Follow-up Interview Questions

Semi Structured Interview Questions
SEO Tools: Making a Case for Integration
The following questions may be asked to participants who choose to take part in semi-structured follow up interviews after completing the survey portion of this study.
Some of the multiple choice and short answer questions from our web survey may be asked to participants during the semi-structured interview to allow participants to articulate more verbose responses.

Interview Preamble
Hi [participant name],
I'm David McVittie, a researcher and Computer Science Masters student from the University of Guelph, located in Guelph, Ontario, Canada. First off, I want to thank you
for taking the time to complete our web survey back in May. Your responses helped us better understand this topic area and today I'm hoping to spend a little time getting to know you better and having a conversation discussing SEO, SEO tools and how SEO tools fit into your workflow.

Before we get started, I want to quickly indicate audio from this interview will be recorded. You're going to say so many great things today that I'm not going to be able to capture everything, so the recording will allow me to go back and listen again. Upon completion of this study, the recordings will be destroyed. So with your permission, I'll start the recording and we can begin!

**Introductory Questions**

1) First, I'd like to learn a little more about you and what your role is as an SEO specialist. So how did you first get into the field of SEO?

[allow for follow up or clarification questions based on the participant's answer]

2) What do you find to be the biggest advantages of including SEO tools in your workflow? What do you find most irritating about SEO tools?

**KW Research**

4) Can you quickly walk me through how you would perform keyword research for a new client's website?

5) How are SEO tools included as part of your keyword research workflow?

6) What SEO tools do you primarily use when conducting keyword research? What are the greatest strengths of these tools? What do you find most irritating about working with these tools?
7) If you were part of a team working to improve keyword research tools, what areas would you look to improve?

**SEO Reporting**

8) How often do you typically create SEO reports? Why do you create these reports?

9) Can you quickly walk me through your process for creating SEO reports?

10) How are SEO tools as part of your reporting workflow?

11) What are the greatest strengths of [the tools described as part of the interview]? What do you find most irritating about working with these tools?

12) If you were part of a team working to improve reporting and monitoring tools, what areas would you look to improve?

13) Do you typically need to export information from SEO reporting tools to other software platforms (other SEO tools or software or presentation software such as Excel or PowerPoint) as part of your report making workflow?

13a) If Yes: Does your reporting and monitoring software allow for the smooth export of information? How could this be done more effectively?

13a) If No: How do you typically turn results from SEO reporting and monitoring tools into a client-ready report?

Wrap up

1) In your expert opinion, how important are SEO tools, such as keyword research or reporting and monitoring tools, in order to perform your job effectively?

2) Do you feel today's SEO tools meet your needs as a SEO professional? What makes them [meet/not meet] your needs?
3) Thinking about opportunities for integration, how could functionality from SEO tools you are familiar with be combined to improve SEO tools?

4) Do you have any closing thoughts on how SEO tools could be improved?

**Appendix H – Web Survey Reviewer Comments**

*Reviewer 1: Ryan*

Hi Ryan,

Thanks for taking a few minutes to help me out reviewing the survey!

As a quick primer on the survey & research study:

This survey is geared towards search engine optimization (SEO) professionals who use software as part of their SEO workflow. The goal of the study is to better understand the role of software in SEO workflows. When the survey is released it will be delivered as a web-based survey and will include a lottery-based incentive offered to all participants who qualify to take part in the study.

At this point, I'm just looking to make sure these questions meet a few criteria:

- You would feel comfortable answering these questions and answering them wouldn't reveal information which you would consider to be "trade secrets" or other privileged information
- The wording and terminology used in the survey clearly defines each question and answer
-The questionnaire flows well and that it does not require a great deal of effort or anxiety to complete.
-The questions are easy to understand and fit within the scope of the survey.
-If you started taking the survey, you would want to complete it.

Feel free to just jot down some notes in an e-mail and send it back or just simply let me know any thoughts you may have had by another means. The questions are attached in a PDF file.

If you qualify and would like to take part in the survey when its complete, let me know and I'll make sure a copy is sent to you when it's online.

Thanks again!

Dave

**Response:**

Hey Dave,

To answer your questions directly, I would feel comfortable answering all of the questions in the survey. I speak as a freelancer, but I don't see any of the questions being construed as digging out proprietary secrets.
I was unsure how to consider the response option "timeliness" for several of the questions. Other than that, the terminology and questions themselves were straightforward.

Are you going to require a response for the 'essay' questions? If so, that would drastically reduce the likelihood of me finishing the survey. The overall length of the survey is fine, but I don't typically take the time to answer open-ended questions on surveys.

Hope this helps!

RH

Reviewer 2: Chris

Hi Chris,

Thanks for taking a few minutes to help me out reviewing the survey!

As a quick primer on the survey & research study:
This survey is geared towards search engine optimization (SEO) professionals who use software as part of their SEO workflow. The goal of the study is to better understand the role of software in SEO workflows. When the survey is released it will be delivered as a web-based survey and will include be a lottery-based incentive offered to all participants who qualify to take part in the study.
At this point, I'm just looking to make sure these questions meet a few criteria:

- You would feel comfortable answering these questions and answering them wouldn't reveal information which you would consider to be "trade secrets" or other privileged information

- The wording and terminology used in the survey clearly defines each question and answer

- The questionnaire flows well and that it does not require a great deal of effort or anxiety to complete

- The questions are easy to understand and fit within the scope of the survey

- If you started taking the survey, you would want to complete it.

Feel free to just jot down some notes in an e-mail and send it back or let me know any thoughts you may have had by another means. The questions are attached in a PDF file.

If you qualify and would like to take part in the survey when its complete, let me know and I'll make sure a copy is sent to you when it's online.

Thanks again!

Dave

*Response:*

Chris messaged me privately on a messenger client and discussed several small wording changes, but felt the survey was adequate as-is.
Reviewer 3: Jim

Hi Jim,

Thanks for taking a few minutes to help me out!

Like I said on the forums, I'm looking to determine whether these questions meet a few criteria:

- You would feel comfortable answering these questions
- The wording and terminology used clearly defines each question/answer set
- The questionnaire flows well and does not require massive amounts of time or thought to complete
- The questions are easily understandable and make sense to be part of this survey

The survey is geared towards Search Engine optimization professionals who use software as part of their workflow.

If you qualify to take part in the survey and are interested in doing so, let me know and I'll make sure a copy is sent to you when it's online.

Thanks again!

Dave


**Response:**

A survey is used to gather quantitative data and/or qualitative information if need be about a certain market demographic so that you may be able to achieve certain goals depending on many factors. I am not sure what your final goals are for your survey are that you wish to achieve with your online survey, but I'll give you my opinion based on my schooling and experience. Take what you need from what I have to offer.

Usually when you set up a survey you have the least complex questions first (quantifiable data, how old are you, where do you live, etc) and then you have your more difficult in depth questions last (qualitative, essay questions). This method of creating a survey allows the individual time to get into the survey, that way when he gets to the more difficult questions he is already into the survey and more likely to answer the question. This also makes the survey seem less threatening. Having the more complex and in depth questions first will turn off people and stop answering your survey (you also usually save qualitative question for face to face interviews and only use these questions in surveys like this if that is all your going to use in your study).

For example, I would have your 2nd question under "Background" at the end of that section, or even at the end of the survey.

You may also want to limit yourself to only a few essay questions. Having several may turn people off of your survey.
The target of your survey seems to be professionals, in which case I can see some of them answering a few essay type questions.

I can see your survey is going to be targeted to a specific demographic, so you may be able to get away with a few essay questions.

For the quantifiable questions (for example 1 How long have you been in the field of search engine optimization (SEO)?) you may want to consider other quantifiable questions as well unless your going to be having this survey placed on specific websites where you already have a good idea of their demographics (age, income, family size etc depending on your goals).

Question 1 I do not like how the answers are worded for question one. Answers a and b look too similar. They also both fall in the same time frame, this is confusing. If you wish to keep answer a and b (due to inexperience and lack of knowledge to be able to answer the rest of the survey)

, I would highly suggest making answer 'a' "less than 6 months" and answer 'b' "between 6 months and a year" or something similar. If you don't need to know if they worked for less than 6 months, I would just get rid of answer 'a' all together and change it to less than a year, and keep the other two answers. You don't need to have 4 answers available to have it be a good survey, it also simplifies the first question to seem less threatening of a survey to take.
Question 2 seems to be a question you would ask face to face in an interview. If you need this question to be asked on the survey because that is the only type of research you are going to do, include it at the end of the survey.

Question 3 At first I thought this question was out of place, but it looks fine.

Question 4 is asking "4) Thinking about your SEO projects over the last 3 years, please indicate the types of industries have you optimized websites for: (Please select all that apply)". Grammar wise, I think you have to switch the have and you around too make it "...please indicate the types of industries you have optimized websites for:" You don't know how many years the person taking the survey have been in this field. For someone answering this survey and have only been in the field for a single year, it may put them off and give them negative thoughts about the survey. I may not understand the context of the question, but this the question seem wordy. It can be shorten a bit, "4) Please indicate the types of websites you have optimized for?" for example.

the first part of the sentence isn't needed, it goes without saying. In each question, you specify in each answer that its a website, so why not stay consistent and change it to 'types of websites'
since its a Internet based question. The "other" question can allow people to answer other area's that does not fall in this realm of websites such as other 'industries"
Question 5 says "5) Thinking back to your previous SEO what were your typical tasks?: (Please select all that apply)" Just keep the questions simple if it can stay simple. You know they work on SEO, they know it, they know the survey is about it as well.

"What are your typical tasks?" Is all you need. They won't be confused by this. If you think they will, then say "What are your typical SEO tasks?".

Question "6) Do you utilize any software to aid in your SEO activities?" good question to end the section. Having screen questions like this saves a lot of energy for you and the person taking the survey. :)

Question 7 (Question 1 in Process section) Seems very wordy. I find that it stops the flow of the survey (its format seems odd for a ranked type question too). You asked that the options be ranked and then in the same sentence say based on their importance. In a question where it involves a task, it may end up being better leaving out the word important since it's already implied. I would also leave out the word factors since it's also easily implied. Be sure the word importance is a type of word you want to use for this survey. Is importance of these factors applicable in this circumstance? Maybe the importance of these factors are important to them but are not important to the overall project, or maybe they have to optimize in a certain way. This may be going in psychographics, but just some food for thought. It seems like an essay question not a survey question as well for its length,
so it also puts me off. Based on these opinions, I would suggest changing the question to
"Rank the following when considering keywords in a SEO project”.
Remember that you’re talking to professionals in this field. Talking to them in a very
descriptive manner assuming they do not know anything will put them off. They know
that keywords
apply to SEO project, as I said. Again, if you really think you need to specify its on a
SEO project (even though the survey is on that) then say something along the lines of
"Rank the following when considering keywords for an SEO project.” Much shorter, less
complex and much easier to understand. I do not think this question needs to be more
complex then this.

Question 8, same as before, you don't need everything before the comma.

Question 9 should be pushed back to the end of the essay or at least at the end of this
section of questions. This question also seems as if your asking them how the software
works and how to use it,
not how they apply the software tools to their keyword research.

Question 10 I would put this question before question 7, and even leave it as is. Doing
this would allow for better flow for your survey, and even help support the changes I
made (your showing them that the rank questions are ranked in importance in
one question already). I think the amount you describe within the question fits well with
the answers. It also doesn't seem intimating at or complex. :)

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Question 11 is this question needed since you have question 10? If so, you may want to spread these two questions apart. The people who take your survey may end up using the answers they have in question 10 because both questions seem similar. I guess you can find this information on your trail runs.

Question 12. A question like this seems very specific for a certain goal or mission that you have in mind. Unless I know what you're trying to accomplish, I really can't criticize this question to any extent.

Question 13. A nice soft question to end this section.

Question 14 seems good.

Question 15. Answer b seems to fall in the same category as answers c to e. I would replace answer b with something like "after a finished SEO project" maybe.

A survey is used to gather quantitative and/or qualitative information about a certain market demographic so that you may be able to achieve certain goals. I am not sure what your final goals are for your study that you wish to achieve with your online survey, but I'll give you my opinion based on my schooling and experience. Take what you need from what I have to offer.
I am going to first assume your attempting to gather quantitative and qualitative information on your demographic.

Usually when you set up a survey you have the the least complex questions first (quantifiable data, how old are you, where do you live, etc) and then you have your more difficult in depth questions last (qualitative, essay questions). This method of creating a survey allows the individual time to get into the survey, that way when he gets to the more difficult questions he is already into the survey and more likely to answer the question. Is also makes the seem less threatening. Having the more complex and in depth questions first will turn off people and stop answering your survey.

For example, I would have your second question under "Background" at the end of that question segment at least, or even at the end of the survey.
You may also want to limit yourself to only a few essay questions. Having several will put off people as well. In your essay though its a specific demographic focusing on a specific group of people. They will tend to be more interested in this line of questioning based on that. You may be able to get away with 6 Essay questions.

For the quantifiable questions such as "1) How long have you been in the field of search engine optimization (SEO)?" You may want to consider other quantifiable questions as well unless your going to be having this survey
placed on specific websites where you already have a good idea of their demographics (age, income, family size etc depending on your goals).

On the same question, you give the option of allowing the person not to answer. This is a good idea if you do no want to pressure your target market into answering if its a touchy subject. In this case though its not considering the specific demographic and and possible psychographic of your target market for the survey.

I do not like how the answers are worded for question one. Answers a and b look too similar. They also both fall in the same time frame, this is confusing. If you wish to keep answer a and b (due to inexperience and lack of knowledge to be able to answer the rest of the survey)

, I would highly suggest making answer 'a' "less than 6 months" and answer 'b' "between 6 months and a year" or something similar. If you don't need to know if they worked for less than 6 months, I would just get rid of answer 'a' all together and change it to less than a year, and keep the other two answers. You don't need to have 4 answers available to have it be a good survey, it also simplifies the first question to seem less threatening of a survey to take.

Question 3 seems awkward. The question seems to ask for specific information, but the answers given seem very general. This seems to make it lack flow, this is just an opinion. If there was a question that seemed uncomfortable to answer,

it would be this one.
Question 4 is asking "4) Thinking about your SEO projects over the last 3 years, please indicate the types of industries have you optimized websites for: (Please select all that apply)". You don't know how many years the person taking the survey have been in this field. For someone answering this survey and have only been in the field for a single year, it may put them off and give them negative thoughts about the survey. This question also seems wordy. It can be shorten a bit. "4) Please indicate the types of websites you have optimized for?" the first part before the comma isn't even needed, it goes without saying. In each question, you specify that each answer is a website, so why not stay consistent and keep it as 'types of websites' since its a Internet based question. The "other" question can allow people to answer other area's that does not fall in this realm of websites.

Question 5 says "5) Thinking back to your previous SEO what were your typical tasks?: (Please select all that apply)" Just keep the questions simple if it can stay simple. You know they work on SEO, they know it, they know the survey is about it. "What are your typical tasks?" Is all you need. They wont be confused by this. If you think they will, then say "What are your typical SEO tasks?".

Question "6) Do you utilize any software to aid in your SEO activities?" good question to end the section. Having screen questions like this saves alot of energy. :)

143
Question 7 (Question 1 in Process) seems very wordy. I find that it stops the flow of the survey (its format seems odd for a ranked type question too). You ask that the options be rank and then in the same sentence say based on their importance. Isn't that repeating yourself? I would assume that these individuals know what ranking means. Also when you use the word "importance" your forcing them to think that their is only one right answer. It seems like an essay question not a survey question.

Based on these opinions, I would suggest changing the question too "Rank the following when considering keywords".

Remember that your talking to professionals in this field. Talking to them in a very descriptive manner assuming they do not know anything will put them off. They know that keywords apply to SEO project, as i said. Again, if you really think you need to specify its on a SEO project (even though the survey is on that) then say something along the lines of "Rank the following when considering keywords for an SEO project." Much shorter, less complex and much easier to understand. I do not think this question needs to be more complex then this.

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Question 13. A nice soft question to end this section.

Question 14 seems good.

Question 15. Answer b seems to fall in the same category as answers c to e. I would replace answer b with something like "after a finished SEO project" maybe.
Question 16 There are ways to simplify this question if need be, but it does look good as is. Simplifying it may hurt communicating staining important pieces of information that you need to collect and communicate.

Question 17 Looks good.

Question 18 I have to add that in a survey you have to be consistent. Your change the way you ask questions multiple times. This disturbers the flow of your survey. For example, you have "Thinking about your SEO projects", "Thinking back to your previous SEO", "Thinking back to your previous projects", and "Thinking back to your previous or ongoing SEO projects". I do not think any of these statements are needed. Even in question 18 it is not needed. Its implied already through the question itself and the survey. There will be no miscommunication if you take these statements out.

Question 19 Looks good.

Question 20 its a simple quantifiable question, I would move this towards the beginning of this section.

Question 21. Same issue i stated for 10 and 11 could be said for 20 and 21.
Question 22 Format wise, question 8 on this section is the same number as question 9.

The entire conclusion section seems specific for your goals that you wish to accomplish. I cannot give any real opinion towards this section unless I knew your goals and mission.

If your doing a follow up interview to this survey, it make be a good idea too cut some (or even all) of the qualitative question and use them for the interview.

The essay questions are very deep and specific questions, it is very difficult to get a correct response for these questions on a online survey. A online survey should be used to gather data. A face to face interview should be where you want to gather the deep questions. Since it will be expensive and time consuming to do an interview with people face to face, you are already limited on the amount of people you can interview. Why force your survey to get less respondents and be forced to get less data when you could cut the essay questions out and use them when picking people to interview (maybe keep one or two essays questions at the most at the end to evaluate who is opened and interested in being involved).