Chapter 3

The Search Engine as an Internet Service Channel

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ABSTRACT

Development of the search engine as a major information and marketing channel resulted from innovative technologies that made it capable of presenting rapid, relevant responses to queries. To do this, the search engine compiles an index of web pages of information stored on the World Wide Web, ranks each page according to its incoming links, matches keywords in the query to those in its index, and returns what it determines are the most relevant pages to the searcher. Innovative and cost-effective ad placement algorithms have attracted advertisers to search engine websites and intensified the competitive dynamics among industry leaders. Their interacting software also continues to draw advertisers from traditional, mass marketing channels like television and newspapers to the online medium to cater to customers who have expressed an interest in their products and services.

INTRODUCTION

In July 2009, search engines responded to 113 billion queries, presenting requested information in the form of text on web pages, images, and other files that resided on the World Wide Web (WWW). This represented a 41% increase in search usage that began when the WWW’s system and software were released in 1992. With the public expansion of the web, considerable expertise was needed for locating information and navigating it required services that catalogued its contents on directories, portals, and indexes. Search engines retrieve text and other data on the web and then index the information enabling them to respond quickly to queries from users of their service. Because of the vast amount of information in their indexes, search providers use various algorithms and formulas in an attempt to present results that are relevant and fit the needs of the information seeker. If it provides results that are specious or useless, the user can easily transfer the search to another provider. Feedback from users

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is consequently immediate and to hold on to their customers, search engines are under considerable pressure to make their services easy to use with rapid response times that provide useful information links (Mostafa, 2005; Williams et al., 2008).

When search results are presented, they are often accompanied by advertisements which are related to the topic being searched, making the search process an interactive marketing channel for services and products. These ads are the principal source of income for these companies and they compete for advertisers by assisting in the designing of ads which are then placed close to search results for viewing by users who expressed an interest in a particular ad’s service or product. Online ad revenues for leading U.S. search engines ranged from $2.8 billion to $11.7 billion in 2007 and because the market is expanding, the competition among search engines for innovative search and ad placement software has intensified (Nocera, 2008).

By detailing the competitive dynamics of the search service industry, this study will focus on how innovative technology and entrepreneurship gained market share for the leading search channels — Google, Yahoo, and Microsoft — and gave rise to online advertising revenue. The growth of the industry will be placed in the context of the development of the Internet and WWW as an information, communications, and marketing medium, followed by the technological advances in search services. The underwriting of the search business by capital markets and by raising ad revenues is detailed followed by an examination of the competitive dynamics of the industry. Concluding remarks are then made.

INDUSTRIAL FRAMEWORK

The Personal Computer (PC)

The commercial success of the IBM PC, first sold in 1981, marked a major shift in the industry by downsizing the computer and its cost and making it available for individual use at home and at work. Technological advances in user-friendly software and powerful micro-processing semiconductor chips also made the PC efficient in creating files, documents, and databases and its use spread rapidly among professionals, office workers, and students who had relied on the typewriter. Microsoft became the main beneficiary of this transition even though it did not develop but instead purchased the technology for the operating system (OS) software that IBM leased for its PC. In the partnership, Microsoft’s management, unlike its counterpart at IBM, understood that software controlled the computer, and the PC with applications programs like word processing would commercially supplant the bigger mainframe machine. The mainframe was also a stand-alone machine that did not share its processing power with other computers. This changed with the spread of the desktop computer especially at research and development (R&D) firms where work on technical projects was conducted simultaneously by engineering teams. Such efforts could be accelerated if the machines were networked allowing information and work to be shared among members of the team. To advance the time-sharing of computing power, Sun Microsystems introduced the first networked work station — a more powerful PC — in 1982 adding to the flexibility and utility of desktop computers (Southwick, 1999). These attributes resulted in a major shift of marketing power from hardware manufacturers of large computers like IBM and DEC to software developers like Microsoft and assemblers of PCs like Compaq which acquired DEC and its Alta Vista search engine in 1998 (Steinmuller, 1996).

Commercial Use of the Internet

The PC was also instrumental in transforming the Arpanet — the secure, communications network of the U.S. Department of Defense (DOD) — into a publicly-used medium. It was established as a
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