

**BUSINESS PLAN FOR COMMERCIALIZING A PRODUCT
FOR AN EARLY STAGE STARTUP**

by

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ABSTRACT

This paper is a business plan to provide a framework for an early stage start-up to commercialize its technology. The sponsors of the project have created an algorithm that summarizes information from different sources into legible paragraph(s). The entity is in the very early stages of being setup and the initial product is a search engine that utilises this algorithm to return answers to queries entered by the users.

The paper looks at the product concept and the technology and provides an industry analysis. It further looks at the main competition, which leads the discussion in to a market analysis that looks at the 3 segments identified by the project sponsors. It then provides direction with regard to the strategy that will help commercialize the product. It goes on to look at sources of funding, expense and revenues. The assumptions and risks are documented and in the end, the recommendations are provided based on the analysis and key findings.

EXECUTIVE SUMMARY

Product ABC is a summarization based search engine which provides the user with search results in the form of a paragraph or two instead of a number of links. This product is based on an algorithm created and patented by the PDT. The product has a distinct advantage that the user does not have to filter the results as is the case with the existing search engines. The filtering and summarization is performed by the technology used in the search engine. As a result the product can be positioned as a research engine which provides answers to the user's queries. Product ABC is scheduled to be launched by the summer of 2008. Other applications of the technology in the form of newsfeeds and mobile search will follow subsequently.

Product ABC will be launched in a market flooded with search engines but dominated by a few companies namely Google, Yahoo! and MSN. Only one summarization based search engine is known to exist in the market which is still in the developmental stages. However the concept is in the market in the form of summarization software and wikis and the interest in the concept is evident by the number of participants in the Documentation Understanding Conference 2007.

For the product to be successful, it needs to satisfy the requirements of 2 sets of people. The users who use the search engine to obtain information and the advertisers that pay for the advertisements that generate revenue for the search engine. The speed of information retrieval and the accuracy and relevance of the search are the important search engine features for the users while the advertisers are interested in the number of

visits to the search engine site and the exposure their advertisement gets. The market analysis determines that the target market is between the ages of 18 and 44 years and is relatively better educated.

Even the market for the product is dominated by a few search engines. The product itself has features, based on the key factors of competition, which are superior to those of the existing search engine or any substitute products. However the awareness of summary based search engines and its benefits is lacking. Commercializing the product will require a strategy that would not only create awareness but also a brand image for the product. This would involve high promotion cost and low price so as to capture a large share of the search engine market.

Based on the factors that include Number of impressions, Major objective of search by the user and Development time, it is recommended that the product be developed initially for health related search topics.

While the 1st year of the operations and product development will be funded by the owners, the product is expected to generate revenues from advertising in the 2nd year. The number of unique visits per month required to breakeven at the end of the 2nd year would range between 50,000 to 200,000 under a number of different scenarios.

As with any product there are risks associated with the launch of this product. These include the inability to create brand identity and differentiation, inability to protect IP, delay in developing the product, difficulty in scaling technology to accommodate increased traffic, and a possibility that a bigger competitor in the industry could back a similar technology of a competitor.

DEDICATION

I dedicate this paper in the loving memory of my father Manharjeet who was my guide, friend and teacher.

I also dedicate this paper to my wife Shalinder and sons Arman and Naman who have made considerable personal sacrifices over the duration of the program and supported me through this very intense period. This paper would be incomplete without thanking my mother for her prayers and wishes, my brother who has been my pillar of strength, my in-laws and other members of my family for their support.

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GLOSSARY

SSE	Summarization based search engine
PDT	Product Development Team – created the technology and are the owners of the product ABC. Their names are being withheld on their request
Vertical search engine	A search engine which specializes in searching within specific topics
CPM	Cost per thousand impressions (unique viewing)
NTBF	New technology-based firms
Wiki	A software that enables creating, editing and linking of web pages collaboratively
ARPA	Advanced Research Projects Agency
ARPANET	Advanced Research Projects Agency Network
Kbps	Unit of data transfer defined as Kilobits per second
Mbps	Unit of data transfer defined as Megabits per second
URL	Uniform resource locator identifies files on the internet
Indexing	A catalogue of websites
Web page crawling	The process of visiting sites to obtain web page updates or to index them
Impressions	The number of times an advertisement is viewed

1: INTRODUCTION

This objective of this paper is to create a business plan to commercialize a technology. The sponsors of the project have created an algorithm that summarizes information from different sources into legible paragraph(s) and has potential use in development of multiple products.

The entity is in the very early stages of being setup. The sponsors of the project are in the process of incorporating the business and registering patents to secure the technology. They are also exploring different sources of financing for their start-up. The initial product is a summary based search engine that utilises this algorithm to return answers to queries entered by search engine users.

This paper aims to provide a framework for the owners to take the initial steps to commercialize the technology by looking at the product concept and the technology. The paper will provide an industry analysis and some brief information on a few of the main competitors. The paper will provide a market analysis that looks at the three segments identified with the sponsors. It will further provide direction with regard to the strategy that will help commercialize the product. Since the sponsors do not expect to launch the product for another year and a detailed financial forecast at this time will be very vague, the paper will look at sources of funding, expenses and potential revenues. Some of the potential risks will be identified to improve the potential of success of the product. Based on the analysis and key findings the paper will provide several recommendations.

1.1 Product concept

Undoubtedly the great advancements made in the field of Computer Sciences in the last hundred years would rank as one of the top achievements of mankind. The development of the internet and the availability of computing devices have changed the way we do business and live our daily lives. Not only has the internet enabled ecommerce but also provided loads of information to businesses and individuals. Ecommerce, blogs, wikis are just a few of the many information sharing tools spawned from the internet.

1.1.1 Background

Like many information and communications technologies, the Internet we know today grew from research by the U.S. Government. The Federal Communications Commission in an article (Congressional Digest, 2007) credits Advanced Research Projects Agency (ARPA) with developing ARPANET (Advanced Research Projects Agency Network) to share and coordinate the development and research taking place in different organizations and locations.

According to the article, initially when the ARPANET began operating, 50 Kbps (kilobits per second) phone circuits were used for network connections. However as traffic levels increased, using the faster 1.5 Mbps (megabits per second) and subsequently 145 Mbps lines became cost effective. This resulted in increased demand, particularly from private sector businesses and Large organizations. While large institutions, governments, and businesses found it economically worthwhile to pay for high-speed connections, the Internet became popular after the introduction of the graphically oriented World Wide Web in 1993 and affordable Internet access using 56 kbps modems operating over public phone lines. The introduction of broadband upgraded individual

access to the Internet. This is when the World Wide Web became a revolutionary source of information around the world.

1.1.2 Overview and Description

With the rapid development and percolation of the internet into daily lives of individuals and businesses the process of identifying useful information and making decisions has become more complex and cumbersome. There are billions of websites covering every possible fragment of every field providing tons of information to filter. Probably an equal amount of information is available to companies on their intranets. To filter this information companies like Yahoo! and Google have built search engines and have prospered by providing faster response to queries and more accurate list of responses. Companies like Google Inc. have grown into giants based primarily on their search engines.

However with overwhelming amounts of information available and the unsurpassable desire of humans to improve presents both an opportunity and a challenge. The currently available search engines provide results for any search based primarily on matching strings and words hence returning thousands of web links. This leaves the end user searching for a needle in the haystack and making the whole process time consuming and cumbersome. On the other hand wikis like Wikipedia provide summaries of the information but these are updated manually by individuals voluntarily and cover the popular topics.

1.2 What business are we in?

The opportunity arising here is the creation of a “research engine” which would not only search the web but also provide the user with an answer for the query in real time. This information would be current and updated rather than a static document that needs to be updated manually. Instead of the human users spending their time in searching through countless sources of information and links returned by a present day search engine, the new technology would present information from multiple pages and locations in the form of a summary that would be easy to read and simple to understand.

This can be achieved by creating a search engine based on summarization technology which can search the web and provide the user with concise and useable information.

1.3 The technology

The technology is based on an algorithm that dynamically generates an article summarizing web content relevant to a user’s question. This technology forms the core of Product ABC¹, a summarization based search engine (SSE) which uses appropriate phrases from different web pages to create a single customized article in response to a user’s question. Future product development would involve using the algorithm for searches on intranet portals as well as in knowledge management systems for companies and organizations.

¹ Name of the company and product have been changed at the request of the project sponsors to protect the identity of the startup.

1.3.1 The innovations

Most popular search engines return a list of web pages in response to a user's query, each containing one or two sentences or sentence fragments along with the title and URL. One common drawback they suffer is that they usually present to users a large amount of irrelevant page links as well as page content that is unrelated to the question. Furthermore, the search results lack of readability and contextual information, which would otherwise help the user to find target pages more efficiently and help narrow down the search. Overall, these search engines return *documents*, but not *answers* – the user has to find or create an answer from the information retrieved.

According to the product development team, Product ABC automatically generates an article that summarizes relevant web pages (called *source pages*) and presents to the user the answers as well as supporting information, which is more readable and understandable than mere web page titles and sentence fragments. In addition, being a real article, the answer contains less irrelevant information and may include multimedia information, i.e., images, videos, sound tracks, etc. Every sentence or multimedia item in the summary has hyperlinks to the original web page from which it was extracted. Therefore each sentence or multimedia item could lead the user to explore more information in the *source page*.

1.3.2 Why are the innovations important

Since Product ABC generates an answer summarizing web contents relevant to a user's question the Product Development Team (2007) states the following as advantages of the product over the leading web search engines.

“The summary is more readable and understandable and contains less irrelevant information, than other web search engines that return to users a list of web page title and sentence fragments.

Users would find target web pages faster using fewer clicks, because not only they may find the answer from the summary directly, but also because contextual information among sentences would help users make decision more confidently and accurately. Imagine replacing the "I feel lucky" button on Google with a button saying "Give me an answer".

Questions or queries are ambiguous – they can mean more than one thing. Our summary in response to a question consists of a group of distinct sub-topics, which would help in resolving query ambiguity and guide the user to narrow down or rephrase the search.

The summary naturally includes text, images, videos, sound tracks, etc. and is thus more informative than merely textual research results. “

1.4 Current Status and Development Plan

A preliminary prototype of a Summarization based Search Engine (SSE) consisting of a front-end user interface and backend web page crawling, indexing, and summarization modules has been developed. The objectives, according to internal documents of the Product Development Team (2007) over the next two years are:

- Launch a search engine for chosen domains by September 2008.

- Generate revenues of \$50K/month by the summer of 2008 and turn in profits during the Spring of 2009.
- Partner with other companies who are content providers or document management companies and provide them with search services.

The Product Development Team would expect the product range to expand into an SSE integrating general-purpose, personalized and mobile web searches over the next 5 to 7 years.

2: THE INDUSTRY

2.1 Porter's 5 forces analysis

Porter provided a framework for understanding the industry and hence its attractiveness which can then be used to formulate the strategy. The framework consists of 5 criteria which impact the companies in the industry. These are

- Threat of entry
- Bargaining power of customers
- Bargaining power of suppliers
- Threat of substitutes
- Rivalry among existing competitors

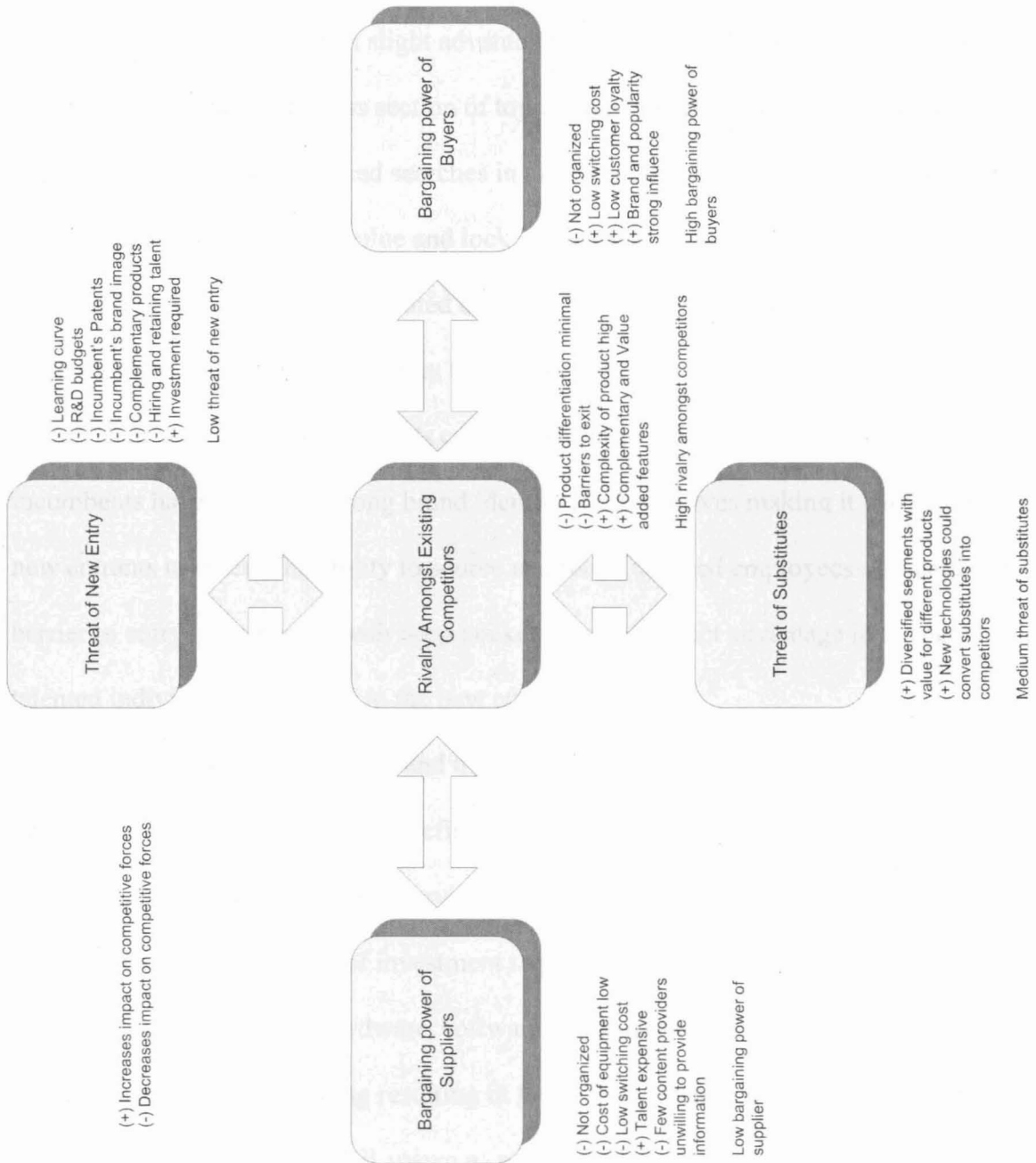
Each of these factors is analyzed in the sections that follow and will help us analyze the existing environment for our product. The analysis is summarized in Figure 1 and will help determine the strategy for the company.

2.1.1 Threat of entry

The Threat of new entry is Low. It determines the ease with which a new company can enter the market. The possibility of new firms entering the industry impacts competition. As competition increases, margins decrease as do the profits making the industry less attractive. In a pure competition environment companies should be able to able to enter or exit markets freely however this is not the case. Although any firm should

be able to enter and exit a market, each industry often presents varying levels of difficulty, commonly driven by economics.

Figure 1: Porter's Five Forces



Manufacturing-based industries are more difficult to enter than many service-based industries due to the investments into plant and equipment. Barriers to entry can be created or exploited to enhance a firm's competitive advantage.

In the search engine industry, economies of scale along with learning curve provide the incumbents with a slight advantage. They have indexed searches for the more common queries across a cross section of topics and subjects. They are able to provide more localized and personalized searches in different languages. They also offer other features and products to add value and lock in the user.

The products are differentiated as a result of patents and R&D to provide faster, more accurate and targeted responses to the user's queries. The R&D budgets and cash resources of some of the incumbents create a barrier to entry. Over a period of time the incumbents have created a strong brand identity for themselves making it harder for the new entrants to enter. The ability to source and retain talented employees also creates a barrier to entry. Incumbents with deep pockets have a distinct advantage in hiring talented individuals compared to the new entrants.

Some of the factors above and the fact that the incumbents have established brands also give the incumbents a definite edge in terms of revenue earned from advertising and fees for premium services.

However the amount of investment required is not very high. A new entrant would require investing in hardware, software and bandwidth. Over the years the prices of these three have been falling resulting in lower investment cost.

New search engines will spawn as a result of newer search technologies and techniques, attractiveness of the market and low investment requirements even though the

barriers to entry are medium - high as the incumbents are well entrenched with significant market share. Hence the threat of new entry is low.

2.1.2 Bargaining power of buyers

The bargaining power of customer is high. The bargaining power of buyers determines the influence the customers of the product would have on the industry. In industries where the customers are stronger in terms of buying power the competition often is fierce as a result of companies in the industry competing harder to gain and retain customers.

In the case of search engines the buyers can be categorized into 2 groups

Users: These are individuals who use the internet for various activities including gathering information by running queries on the search engines. They determine the market share of the search engine based on the number of queries run on the search engines.

Advertisers: They are the major source of revenue based on the advertising placed on the search engines.

Neither the users nor the advertisers are formally organized. However the users have low loyalty and switch search engines based on the speed and accuracy of the response to a query. The factor that drives the success of the search engines is the percentage of online searches done on a particular search engine. The users congregate to the search engines with the highest perceived value thereby making the search engine successful. The advertisers may have some power to determine where they advertise but they would be swayed by the numbers of queries executed by the search engines. The decision of the advertisers will also be affected by the brand identity of the incumbents

since advertising on a popular search engine will help the advertisers reach a larger audience.

As discussed in the next section speed and accuracy of the response to a query are the most important success factor in the search engine industry. While the current search engines provide the speed option, a new entrant may be successful by providing higher accuracy by using techniques like summarization. This would attract the users to migrate to the new entrant who would bring along with them the advertisers resulting in increased brand identification.

Based on the above discussion the bargaining power of customer is high.

2.1.3 Bargaining power of suppliers

The bargaining power of suppliers is low. This would determine the ability of the company to obtain (raw) material which would be essential to run the business. If the suppliers are few and dominant they can control and manipulate the cost of raw material.

In the case of search engines the suppliers would be employees, companies providing hardware, software and communication channels as well as the content providers.

The employees would not have significant ability to impact the industry due to a lack of formal organization of the labor pool. Obtaining and retaining the top talent would require deep pockets which would not be a significant issue for the more established incumbents in the industry. As a result of a mobile workforce, outsourcing, technology and globalization cheaper labour options are available. These factors also make a larger pool of talent available. Hence a cheaper labour option and a larger pool of talent results in low bargaining power for employees. More over most technology

companies including search engine companies have been founded by some very talented individuals who themselves provide direction to the companies.

There are a number of companies that provide the hardware, the software and the communication channel. These companies may have stronger relations with the bigger players in the industry but would not have a significant impact on the operations of the industry as there is very little differentiation between the products and services they provide.

The content providers are not organized and most would prefer the display of their content. Only a few providers prevent display of their information by using patents to protect their content.

The bargaining power of suppliers is low.

2.1.4 Threat of Substitutes

The threat of substitutes is medium. Substitutes are products that are available in other industries and could meet the customers need. The incumbents are in a significantly weaker position if substitute products are readily available to satisfy the needs of the customer in a reasonable manner.

Products are available in the market which could satisfy the customers need to obtain information. These can be in the form of Wikis, books, knowledge and content management software etc. New technologies will help improve and create new substitute products. A Wiki, for example, helps create a collaborative source of information where most of the information is only a click away and does not require the use of a search engine. Also different segments of the market may see better value in one of the substitute products and may end up indirectly promoting it. While Gen Y may rely on

Wikis for information, the Baby Boomers may be more comfortable searching for information in libraries. The summarization feature of Product ABC may help bridge the gap between the Baby Boomers and internet search by providing accurate responses in the form of readable text without the user having to expend significant effort and time.

Threat of substitutes is medium.

2.1.5 Rivalry among existing competitors

The rivalry among existing competitors is high. This is determined by the incumbents in the industry. This also depends on a number of factors like the number of incumbents and diversity of competitors.

The rivals in the industry can be broadly be categorized into 3 segments

- Multi-document search engines in the form of Sloth-reader: Even though Sloth-reader is the only similar product and in the preliminary stages of entering the market but a number of researchers are already looking at multi-document summarization as evident by the number of participants in the Documentation Understanding Conference 2007
- Existing search engines: Rivalry in the industry is fierce owing to the fact that it is dominated by 3 cash rich companies Google, Yahoo! and Microsoft. There are other search engines as well which my target more niche markets.
- Wikis dominated essentially by Wikipedia: Provide a relatively new source of information where individuals submit and update the knowledge available for the various topics.

Advancements in the technology of search engines and summarization will continue to provide opportunities for the industry to grow. The search engine market is

looking at key features of speed of retrieval and accuracy of retrieved information.

According to the US Bureau of Census the growth in revenue between 2004 and 2005 for web search portals was over 42% from USD 4,960 Million to USD 7,120 Million.

Fixed costs for the companies can be categorized into

R&D costs: This would include the cost of R&D and subsequent patent filing costs.

Hardware and software cost: These have been reducing exponentially over the past years with cheaper and more durable and versatile hardware and software.

The difference between the products offered by the 3 dominant search engines is minimal. Their offerings are enhanced by the value added features and complementary products like IM, email etc which are an attempt to create lock in.

Switching cost typically for the user are low since the end user is more concerned with the accuracy and speed of the result and will switch as soon as a more efficient source of information is available.

Complexity of the product is high and it would take considerable research and effort to create a search engine let alone a search engine based on multi-document summarization. As a result corporate stakes are high in this industry as the main source of revenue is advertising dollars and the greater the market share in terms of queries the larger would be probability of attracting the advertisers.

The only significant exit barrier is recovering the R&D cost for the development of the product.

Based on the above discussion the rivalry among existing competitors is high.

2.2 Competitive analysis

In any industry one of the criteria for success (Kim & Mauborgne, 2002) is the key factors on which the companies compete. For Product ABC these factors are compared in Table 1 where the Product column represents the different players in the industry described below.

- 1) Popular SE are the existing search engines like Google, Yahoo! etc.
- 2) Wikis are the collaborative website like Wikipedia.
- 3) Summarization Search Engine are the search engines that provide the user with a summary for their query rather than a list of URL that are provided by the Popular SE. Product ABC represents this category.
- 4) Summarization software is the software that automatically summarizes the content of a document.

Table 1: Key factors of competition

Product	Speed or Response time	Accuracy	Summarization	On demand	Works on Internet	Works on Intranet	Supplement products
Popular SE (Search Engine)	5	3	2	5	5	5	5
Wikis	5	3	5	1	5	2	3
Summarization Search Engine	4	5	5	5	5	5	2
Summarization Software	5	2	5	5	2	2	2

While Product ABC competes directly in the search engine category with the Popular SE, it also competes with the Wikis as a source of information. While Product ABC does not compete directly with the summarization software but either product has

the potential to be modified to serve the same purpose as the other resulting in potential source of competition.

Further the columns represent the features that the above mentioned products compete on and are described as

- 1) Response time: It is the time taken to generate a response once a query is submitted. As more and more information is becoming available on the internet, the response time is becoming critical since the users have less and less time to look for information.

Product ABC at present has a slightly slower response time than the current search engines but as the product develops the PDT expects the response time to be comparable.

- 2) Accuracy of response: This is the relevance of the results generated in response to the query.

Due to the summarized response generated to any query by product ABC, the accuracy of the response is high. The user is provided with the detailed answer upfront and does not need to guess where the information is available.

- 3) Summarization: This is the presentation of the most relevant information in one or more paragraphs resulting in the user obtaining the required information faster and with minimal effort.

Product ABC helps in providing the reader with concise details in a form of a couple of paragraphs.

- 4) On demand: This factor ensures that the information available is current and updated. The user is provided with the newest information.

Unlike Wikis, where the information is updated by individuals, the information provided by Product ABC is current. Product ABC searches the websites and updates the information on a regular basis so that it can be presented to the user when queried.

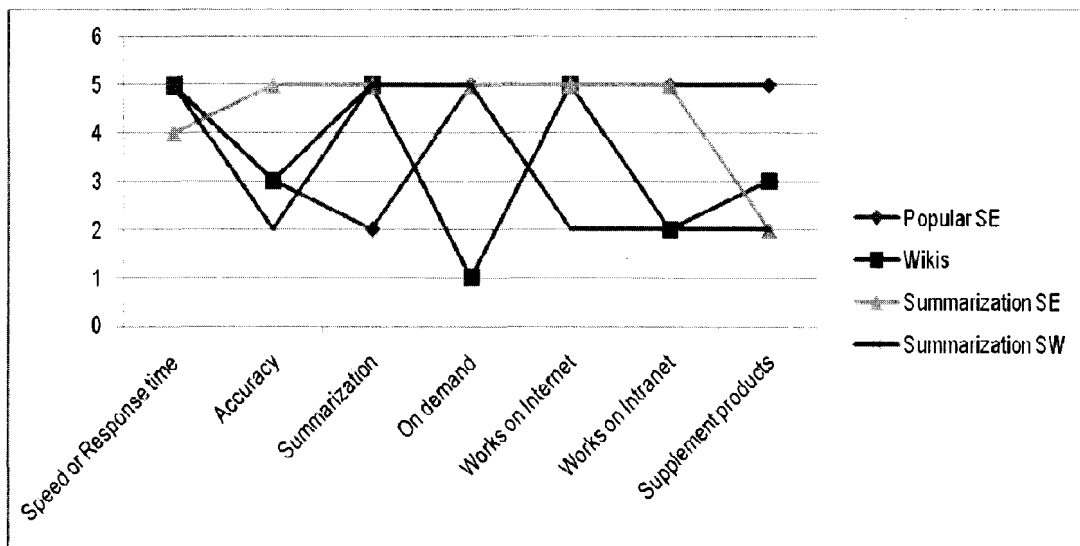
- 5) Works on internet: The query looks for the information on the internet and generates response based on the information on the internet.

Although all current search engines work similarly but none of the available summarization software have internet search capabilities.

- 6) Works on the intranet: The query looks for the information on the intranet and internal portals of companies and institutions and generates response based on the information on the intranet or portal.

Product ABC can be used in a knowledge management system that can summarize information for companies and institutes.

Figure 2: Key factors for competition



7) Supplementary products: These are the additional services or features provided which may include email, newsfeeds etc. This results in being a source of retaining users by providing them with additional value.

Even though there are no supplemental product for Product ABC at present but other products like newsfeeds etc. are in the process of being developed to provide additional value to the user.

The most significant factors for competing in the search engine market are Speed and response to the query represented by Accuracy, Summarization and On demand. The data from Table 1 is represented in the graph in Figure 2 and it shows that Product ABC has an advantage over the Popular SE with respect to Accuracy and Summarization. It also has significant advantages over Wikis in terms of the updated and accurate information presented as a result of a query. The disadvantage of Product ABC are in terms of the Speed or Response time where it is slightly slower and in terms of Supplement products like email etc. which have helped the Popular SE like Google to lock in customers.

To compete with the existing search engines, Product ABC will need to exploit its advantages in Accuracy and Summarization by identifying markets which value the quality and the content that the query returns rather than the response time of the query.

2.3 Major players

There are a number of players in the industry as mentioned below and details of the 3 most significant companies are discussed below

Google: Google Inc. (Datamonitor, 2006) developed the leading internet search engine in the world and specializes in internet search engines and related advertising

services. It is available as Google.com and 136 international domains like Google.ca. It is also available in 116 languages. The company generates revenue primarily from advertisers who pay Google each time a user clicks on one of the text-based ads that appears next to the search results on Google's web sites. Google also provides Google Analytics, the free Web analytics tool designed to enable Website operators understand how users navigate their sites. Google also generates revenues from the license of its web search technology, the license of its search solutions to enterprises and the sale and license of other products and services. Google also provides services to large and small business to manage their information by using the Google technology in the background. During the fiscal year 2005, the advertising division recorded revenues of \$6,065 million, an increase of 93% over 2004 while the licensing and others division recorded revenues of \$73.6 million in fiscal year 2005, an increase of 60.3% over 2004. The US, Google's largest geographical market, accounted for 61.2% of these revenues while UK accounted for 14.3% and the Rest of the World accounted for 24.5% of the total revenues.

Google Inc. was created by Sergey Brin and Larry Page in 1998 by developing a technology for a search engine. They raised funding from private investors and venture firms. Google initially answered 10,000 search queries per day but by the end of 1998 it was one of the top search engines. The company went public in 2004 with an initial public offering (IPO) of its stock through an online auction to raise around \$2.7 billion.

Some of the products and tools provided by Google are shown in Table 2. Google also has partnerships and agreements with a number of companies like AOL/Netscape and Yahoo. It also has agreements with the libraries of Harvard, Stanford, the University of Michigan, and the University of Oxford, and The New York Public Library to digitally

scan books from their collections so that users worldwide can search them through Google. Other significant agreements include those with Fox Interactive Media under which Google will be the exclusive search and keyword targeted advertising sales provider for Fox Interactive Media's growing network of web properties including MySpace.com. The agreement between Google and eBay benefits both companies' by tapping into collective communities of users, merchants and advertisers.

Table 2: Products and Tools from Google

Froogle	For comparison online shopping service
Google news	For news feeds
Gmail	Email service
Blogger	web based publishing tools for blogs
Google Checkout	a merchant payment solution that enables online vendors to more easily process customer purchases
Google Talk	Instant messaging
Google Images	Online image library
Google News	News feeds
Google Finance	financial news and information
Google Maps	interactive maps
Google Groups	(internet discussion groups)
Google Mobile	For search on mobile devices worldwide
Picasa	To enables users to find, edit and share all the pictures on their computers
YouTube	For video content
Writely	web-based collaborative word processor

Google provides a number of products to add value for the user's as well as the advertisers. Users can use Google toolbar to search from anywhere on the web, without

visiting the Google homepage. It also introduced the first wireless search technology for WAP phones and handheld devices.

Yahoo!: Yahoo! (Datamonitor, 2006) is one of the leading global internet businesses, providing internet services to individuals and businesses worldwide. The company provides a range of services to individuals, including search services, local offerings such as yellow pages, market place offerings such as shopping, information, entertainment and communication.

Yahoo! generates revenues by providing marketing services to businesses across its product range and establishing paying relationships with users for premium services. The company provides services in more than 15 languages in over 20 countries.

The company's offerings to users and businesses fall into four categories shown in Table 4.

Yahoo! Search is the company's proprietary algorithmic search technology, which provides free internet search results sorted on relevance to the user's search query.

Yahoo! Shopping provides search functionality and comparison shopping tools to find, research, compare and buy products online.

Yahoo! Auctions is a marketplace for buyers and sellers to trade goods in an auction-style setting. Yahoo! News aggregates news stories from providers such as the Associated Press, Reuters, AFP, The Washington Post, USA Today, Chicago Tribune, National Public Radio, and U.S. News and World Report. Yahoo! Finance provides a set of financial resources that range from investment and company information to personal finance management tools. Yahoo! Health provides healthcare information.

The Yahoo search engine was created by David Filo and Jerry Yang and incorporated in 1995. Yahoo came out with its initial public offering in 1996. In 1997, Yahoo created the internet navigation service Netscape Guide for Netscape Communications (now part of America Online). the company offered Yahoo Visa cards for customers. Yahoo entered the business-to-business market in 2000, launching its Yahoo B2B marketplace. It teamed with partners Inktomi, Critical Path, and Tibco to develop enterprise information portals. Later Yahoo switched to Google as its search engine provider.

Table 3: Products and Tools from Yahoo!

Search services	Yahoo! Search, Yahoo! Desktop search, Yahoo! Toolbar, Yahoo! Search on mobile
Local Search services	Yahoo! Local, Yahoo! Yellow Pages, Yahoo! Maps
Marketplace services	Yahoo! Shopping, Kelkoo, Yahoo! Auctions, Yahoo! Real Estate, Yahoo! Travel, Yahoo! Autos, Yahoo! Personals, Yahoo! Personals Premier, Yahoo! HotJobs, Yahoo! Small Business, Yahoo! Domains, Yahoo! Web Hosting, Yahoo! Business Mail, Yahoo! Merchant Solutions,
Information services	Yahoo! Front Page, My Yahoo!, Yahoo! News, Yahoo! Finance, Yahoo! Health, Yahoo! Education,
Entertainment services	Yahoo! Sports, Yahoo! Music, Yahoo! Movies, Yahoo! TV, Yahoo! Go TV, Yahoo! Games, Yahoo!igans!
Communications services	Yahoo! Mail, Yahoo! Messenger with Voice, Yahoo! Photos, Yahoo! Communities
Connected life	Yahoo! Mobile, Yahoo! Go BT, Yahoo broadband SBC, Yahoo DSL, Yahoo Plus

Yahoo collaborated with AT&T Wireless to provide messaging services from mobile phones as well as personal computers. AutoTrader.com, the world's largest

automotive marketplace, and Yahoo! Autos, signed an agreement making AutoTrader.com the exclusive provider of used car classifieds on Yahoo! Autos. The company entered into podcasting with the release of Yahoo! Podcasts. The company acquired Flickr, a website offering photo management and photo sharing; and del.icio.us, a free website offering social bookmarking services.

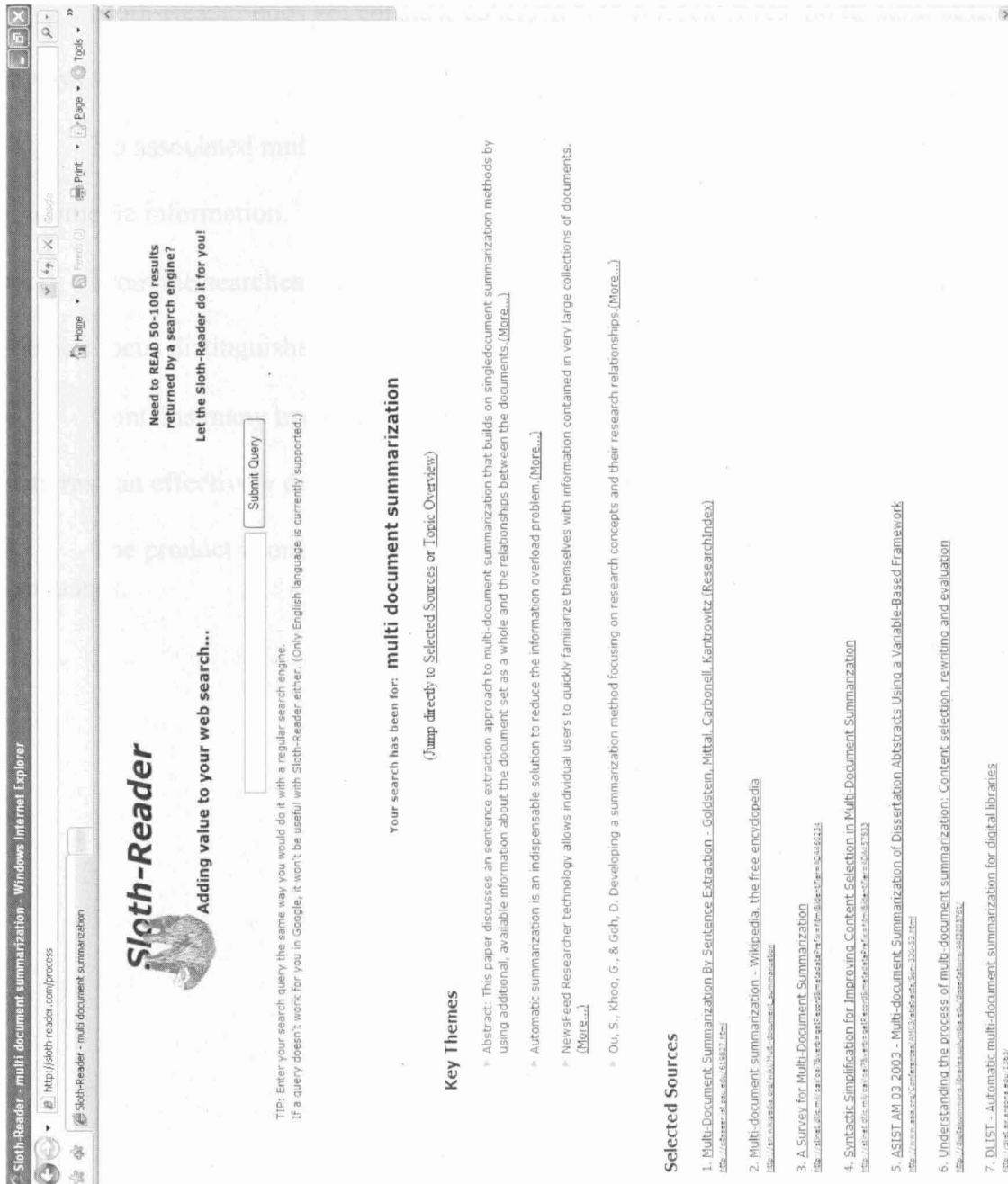
The company recorded revenues of \$5,257.7 million during the fiscal year ended December 2005, an increase of 47.1% over 2004. These came from marketing services (87.4%), and fees (12.6%). The US, Yahoo!'s largest geographical market, accounted for 69.8% of the total revenues and the rest of the world accounted for the remaining 30.2%.

Sloth-reader (SR): This is a search engine, which is closest, in concept to product ABC and is provided by Power Text Solution, a privately held company. This product employs multi-document summarization techniques to try and provides results to queries in the form of summaries which are close to human quality comprehensions in structure, reading and comprehension. The summary is the information provided by the top-100 relevant URLs returned by Google, a popular search engine. The user gets not only the summary but also the Key themes and list of source URL.

Using the same technology the company also provides another product called News-Feed Researcher (NFR) which is also an information portal with summarization of current news under different categories. The news stories are sourced from Google News and categorized under common categories like business, sports, entertainment etc. Users can also generate a summary on any selected topic.

According to its website, the company aims to target information seekers like students, researchers, analysts, journalists with SR and NFR. For future development the company plans to upgrade its search process to return exact answers to questions formulated in English and hope to support non-English languages.

Figure 3: A result page for Sloth-Reader



Some of the drawbacks of Sloth-reader as identified by the PDT are:

- It only looks at lexical patterns of text, with no syntactic or semantic analysis.
- The query retrieves top 100 relevant pages from another search engine and summarizes them in real time. As a result the response time is long (a couple of minutes), even though it only matches lexical patterns.
- Sloth-Reader does not consider cohesion between sentences. So its summaries always seem to sentences from different web pages.
- No associated multimedia information due to lack of indexing and storing multimedia information.
- From the searches carried out using SR it was observed that hardly see each topic/theme's focus distinguished from others
- Contains many irrelevant and redundant sentences (I doubt matching lexical patterns can effectively detect redundancy).
- The product is only available in English and does not support any other languages.

3: MARKET ANALYSIS

Marketing a product is often the most challenging and decisive activity a company has to perform. Understanding the customer needs and satisfying them profitably is important for any business to succeed. This would be a greater challenge for a start up company since it would have limited resources and the market may have established competitors.

3.1 Market size

Knowing the size of the market for the product plays an important role in developing the company strategy, identifying the target market and developing the product.

In case of product ABC the market can be categorized as users and advertisers. The users comprise of the people who look for information online and use search engines as a tool for their research. The advertisers comprise of the companies who use various advertising methods to attract the users to the company websites to generate traffic and in turn a sale in most cases.

Users:

The internet is available to 17.6% of the world population and this number is higher in the developed and western world. A survey by Pew Internet & American Life Project Surveys between February 15 – April 6, 2006 shows that 73% of respondents (about 147 million adults) are internet users, up from 66% (about 133 million adults) from a survey in January 2005. The share of Americans who have broadband connections

at home has reached 42% (about 84 million), up from 29% (about 59 million) in January 2005.

Advertisers:

In a report by Internet Advertising Bureau the internet accounted for \$16.9 Billion or 5.9% of the total U.S. ad spending of approx \$285 billion in 2006. This was more than the advertising spending on Broadcast television (\$10.87 billion) and Cable television (\$4.05 billion).

Based on the number by the Interactive Advertising Bureau, eMarketer.com estimates that US online advertising would be close to \$19.5 billion for 2007 and \$36.5 billion for 2011

These numbers provide a sizable market in terms of the number of people that can be targeted and the amount of dollars that the advertisers spend to target these people. However not all the customers can be served effectively due to individual and group choices, preferences and behaviours. To identify the target customers it would be best to look at groups of customers whose needs can be identified and satisfied with the available resources and minimum effort.

3.2 Market segmentation

Kotler & Keller (2006) define a market segment as a group of customers who share a similar set of needs and wants. They also state that “The marketer does not create the segments; the marketer’s task is to identify the segments and decide which one(s) to target”

Kotler & Keller (2006) further observe that market segment offers key benefits over mass marketing. The company can presumably better design, price, disclose, and

deliver the product or service to satisfy the target market. Accordingly, consumer markets can be segmented as

Geographic: Based on different geographical units such as nations, states, regions, countries, cities etc.

Demographic: Based on variables like age, family size, family life cycle, gender, income, occupation, education, race, nationality etc.

Psychographic: Based on psychological/personality traits, lifestyle or values

Behavioural: Based on knowledge of, attitude towards, use of or response to a particular product.

For Product ABC, the market can be segmented geographically based on countries and regions. North America and in particular, the United States is the prime geographic location that can be targeted for the product.

According to www.internetstats.com United States has about 18% of the world internet users which provides a significant market for Product ABC. A number of surveys have been commissioned by different companies and organizations to understand the demographics of the people who use search engines based on gender, age, income and occupation. As a result of these surveys substantial amount of consumer information is also available to understand the Demographic, Psychographic and Behavioural behaviours of the search engine users. These surveys also identify the common activities the internet and the search engines are used for. These give a fair bit of idea of the market segment that can be targeted.

The internet advertising revenues (IAB, 2007) totalled \$16.9 billion for 2006 which was a 35% increase over the previous year. The market in the United States would

be easily accessible in terms of proximity and culturally the US market would be close to the Canadian market as well.

In a 2005 report titled How America Searches, icrossing.com determined, in a survey of over 2,000 people, that 88% of the search engine users used the search engines to research specific topics, 62% used search engines for conducting general surfing/travelling and 51% for shopping.

The study also determined that the most popular search for Ask Jeeves and MSN users was obtaining medical and health information. Among other things Google users tended to use search for business or professional research more often than the users of other search engines. Though Google was the most popular search engine with 77% of the respondents using Google but the customer loyalty was low with only 13% using only Google for searching. The other thing that the study noted was that the longer the users had been online in terms of years the more likely they used search and more likely they would have a graduate or undergraduate degree.

3.3 Target markets

Numerous studies and surveys have tried to understand Internet users and their activities. These provide details of the users based on their gender, age, income, education.

To develop Product ABC the Product Development Team rated a number of factors (Appendix A) to select the 3 markets they would potentially target. The factors were:

- background knowledge of the domain in generating summaries – creating summarization rules for areas like Travel were simpler than areas like Legal
- amount of text available in the domain.
- number of potential customers estimated.
- Sales cycle: time taken from service-out out to money-in.
- Potential of making profit by selling (1) services, or (2) advertisements.
- Which categories of *our business* does this market fit in?

Based on the ratings 6 areas were identified as potential markets for the initial product. These were Shopping, Travel, Health, Careers, News publishing and Arts (Music). While News publishing or News feeds was an attractive area it was decided to be developed as a separate product. Art (Music) was abandoned due to the type of multimedia content and existence of Music based search engines. Shopping was selected since the prototype for the search engine was created on summarization of Consumer electronics. Of the remaining 3 areas it was felt that developing a search engine for Travel and Health would be faster than Careers.

Based on these 3 areas a market study was performed to further investigate the attractiveness of the segments in the market for the launch of Product ABC.

Travel: A survey by TIA titled Travellers' Use of the Internet, 2004 Edition found 85 percent or 96 million of adults who use the Internet identify themselves as travellers. About 52% of these online travellers were women and 48% of online travellers had children in the household. Also 67% of online travellers said that they consulted the Internet to get information on destinations or to check prices or schedules.

Online travel agency websites, search engine websites, and company-owned websites (airlines, hotels, etc.) were the most popular online sources for travel planning. More than one-third of online travel bookers paid for or made their reservations using search engine sites. Destination websites were also popular for source of information. The most popular searches online were for airfares/schedules, maps or driving directions, and looking for places to stay.

Table 4: Travel information search

Travel information search				
	Online	Offline	On/offline	None
Accommodations	683	77	374	187
	51.70%	5.80%	28.30%	14.20%
Activities	314	104	273	630
	23.80%	7.90%	20.70%	47.70%
Attractions	419	129	433	340
	31.70%	9.80%	32.80%	25.70%
Car rentals	338	67	114	802
	25.60%	5.10%	8.60%	60.70%
Events	364	86	275	596
	27.60%	6.50%	20.80%	45.10%
Flights	581	63	181	496
	44.00%	4.80%	13.70%	37.50%
(N = 1,321)				

Report: Relationships between Travel Information Search and Travel Product Purchase in Pretrip Contexts
From: Journal of Travel Research

Another survey by EPM Communication titled *Wealthy travellers turn to the Internet for information* found nearly 74% of U.S. summer travellers used the Internet to research and make travel plans. The Internet was the primary source for travel information and reservations for 28% of travellers, and another 46% use the Internet but

not as their primary resource. Also as shown in Table 4, searching for accommodation online was the most popular activity.

Health: In all, 80% of internet users have looked online for at least one of the 17 topics in Table 5. The largest demographics of people who searched for information online were in the 30-40 age group and in most of the topics that were searched, women searched more often than men.

Research by the Pew Internet & American Life Project shows that, as more and more Americans come online, so too do more Americans rely on the internet for important health information.

In a March 2005 survey, 12% of online adults (about 17 million people) said the internet played a crucial or important role as they helped another person cope with a major illness. This compared to only 11 million people in a January 2002 survey. While a December 2005 survey found that one in five (20%) online Americans said the internet has greatly improved the way they get information about health care.

The survey dealt with people who helped someone deal with a major illness or health condition, if they had, whether the internet played a crucial role, an important one, a minor role, or no role at all in this event. The survey defined “e-caregivers” as those who said they had found the internet to be crucial or important during a loved one’s recent health crisis. The survey found that the internet helped 36% of e-caregivers find advice or support from other people and 34% of e-caregivers said the internet helped them find professional or expert services. While 26% of e-caregivers said the internet helped them find information or compare options, 58% of e-caregivers said the *most important* source was something they found on the internet.

Table 5: Health topic search

	All internet users	Online women	Online men	Age 18-29	Age 30-49	Age 50-64	Age 65+	High school or less	Some college	College grad
Specific disease or medical problem	64%	69%	58%	61%	67%	64%	54%	52%	65%	74%
Certain medical treatment	51	54	47	45	56	51	40	41	51	62
Diet, nutrition, vitamins	49	53	45	45	55	49	29	40	52	56
Exercise or fitness	44	46	41	55	47	35	24	35	47	51
Prescription or over the-counter drugs	37	39	35	29	42	40	30	29	38	45
A particular doctor or hospital	29	31	27	27	33	26	18	21	25	40
Health insurance	28	27	29	23	34	27	12	20	28	37
Alternative treatments or medicines	27	29	25	25	29	29	14	22	29	31
Depression, anxiety, stress, or mental health issues	22	26	17	25	24	20	7	21	24	22
Environmental health hazards	22	21	22	25	23	22	10	16	23	26
Experimental treatments or medicines	18	18	19	18	19	18	14	15	21	20
Immunizations or vaccinations	16	15	17	18	18	12	7	13	15	19
Dental health information	15	14	15	17	16	12	6	13	14	16
Medicare or Medicaid	13	13	13	10	11	15	22	12	14	13
Sexual health information	11	11	12	21	10	7	2	10	15	10
How to quit smoking	9	10	8	13	8	9	3	11	10	7
Problems with drugs or alcohol	8	9	8	14	6	7	2	8	10	7

Source: Pew Internet & American Life Project August 2006 Survey (N=1,990)

Shopping: In another report titled *How America Searches: Online Shopping*, icrossing.com determined that the vast majority of online adults who purchase online (88%) conduct research at least sometimes prior to completing their purchase. 65% online shoppers said they often/always rely on the internet to research unfamiliar products.

Shoppers 55 years old and older were less likely to conduct research than younger age groups and showed lower rates of research for expensive or unfamiliar products.

Men are more likely to conduct online research than women. 37% of men always researched (online) prior to buying an expensive item compared to 29% of women. Also 60% of the users always or often researched online to find the best price. Both, those who spend more and those who shop more frequently were considerably more likely to conduct research before making a purchase decision, especially when the product is expensive or unfamiliar, or when looking for the best price. This was more apparent among shoppers who make online purchases monthly or more frequently.

Search engines were the most popular tool for conducting product research. Those who had purchased home electronics online than offline reported a higher-than-average use of online search tools. The study found that 42% of the online users used search engines as their primary tool for researching product information. 74% of those who used search engines to research product information used the search engine essentially to investigate and learn more about the product. This behavior tended to be more prevalent among men ages 18-34 (82%).

Search engines were also the most trusted resource for finding a place to buy the product. 60% of those aged 18-34 used search engines to find a web site from which to

buy compared to 50% of those aged 35 years and older. Use of search engines to find a web site from which to buy also tended to rise with household income. Frequent shoppers (those buying online at least once a month) and higher spenders (those spending more than \$1,000 per year) used search engines to a greater extent to learn about products, find web sites from which to buy and to find where to purchase the product they're looking for.

To determine the area the PDT should first target, 3 criterions were selected. These criterions were based on generating revenue in the shortest possible time by satisfying the needs of the user and are mentioned below.

- Number of impressions: the main source of revenue at this time would be the advertisers. the number which would result in revenue,
- Major objective of search by the user
- Development time

Table 6: Target Segment

	Travel	Health	Shopping (Consumer electronics)
Number of impressions in Feb 2007 (in Millions) (Appendix B)	8086	5668	4043.8
Major objective of search	Price	Information	Information and price/feature comparison
Development required	Approx 3-6 months	Approx 3-6 months	Prototype ready

Even though the number of impressions for Travel is much higher than Health and Online shopping as shown in Table 6, the major objective of the search is identifying low price rather than research or information. On the other hand for Health the summarization

feature of Product ABC would provide the user with the summarized information they are looking for. As a result the search engine for Health would be a much more complete search engine providing better value to the user compared to that for Online shopping focusing on Consumer electronics.

3.4 Market positioning

Kotler & Keller (2006) define positioning as the act of designing the company's offering and image to occupy a distinctive place in the mind of the target market. The goal is to locate the brand in the minds of consumers to maximize the potential benefits to the firm. A good brand positioning helps guide marketing strategy by clarifying the brand's essence, what goals it helps the consumers achieve, and how it does so in a unique way.

In all 3 of the segments studied above the target market is educated, in the 18-44 year range. It is essential that the product create its separate image in the industry. It should be positioned as a search engine that not only provides response to queries but provides answers to the queries the user have. This will benefit users who are researching details for topics like health, travel and online shopping. Instead of the user searching through every link returned as a result of the query the search engine summarizes the results and provides the reader with the article with the details required and the options to search more details.

4: THE STRATEGY

Bukszar (2006) defined strategy as the creation of a unique and valuable position involving a set of activities

- serving a few needs of many customers
- serving broad needs of a few customers
- serving broad needs of many customers in a narrow market

4.1 Generic strategies

Porter (1980) provided the following 3 generic strategies to outperform other firms in an industry.

Overall cost leadership: This strategy requires that the cost of providing the product or service to the customer is low by gaining efficiencies, cost reductions, overhead control etc.

Differentiation: This strategy differentiates the product or service offering in such a way that the product or service is considered unique.

Focus: In this strategy the product or service targets a particular segment of the market effectively or efficiently while the competitor targets the broad market.

Figure 4: Porter's Generic Strategies

		Strategic Advantage	
		Uniqueness Perceived	Low Cost Position
Strategic Target	Industry wide	Differentiation	Overall Cost Leadership
	Particular Segment	Focus	

For Product ABC the recommended strategy is Focus. By targeting segments that it can serve well Product ABC will be able to provide greater value to the user. The product would need to be perceived as unique and the users would typically value quality and the content that the query returns rather than the response time of the query. The summarized results will help the user find and research the required information in an effective manner without wasting time and effort. This strategy will also help the PDT to utilize its limited resources efficiently compared to a shotgun approach of targeting the entire market controlled by well established incumbents.

4.2 Entry Strategy

Bukszar (2006) defined 4 entry strategies for a new product based on pricing and promotion

Slow skimming: Market is aware of product but relatively price insensitive. Often used when patents block entry or when other strategies unaffordable, high opportunity risk cost

Appendix B

Advertising Breakdown by Industry, January and February 2007			
Industry	Total Impressions, February 2007 (M)	Total Impressions, January 2007 (M)	Change From Previous Month (%)
Automotive	6,264.0	5,513.4	13.61
Business-to-business	5,706.3	7,795.7	-26.80
Consumer goods	10,196.5	7,875.3	29.48
Entertainment	4,785.8	9,352.4	-48.83
Financial services	71,293.7	71,753.9	-0.64
Hardware and electronics	4,043.8	5,073.4	-20.29
Health	5,668.0	7,193.0	-21.20
Public services	24,049.4	27,244.9	-11.73
Retail goods and services	42,087.1	50,832.8	-17.20
Software	8,886.9	9,731.4	-8.68
Telecommunications	21,252.4	23,213.6	-8.45
Travel	8,086.6	7,887.5	2.52
Web media	66,280.6	66,802.1	-0.78
Source: Nielsen//NetRatings, 2007			

Along with the low prices, the promotion will be high. This will include not only advertising online and print media but also public relation and awareness campaigns targeted at both the users and the advertisers.

4.3 Marketing mix

Kotler & Keller (2006) identify the 4 P's of the marketing mix as summarized below:

Product: It is the good or service that is offered to the consumer to satisfy a particular need.

Price: It is the value that the customer is willing to pay for the product. It includes the list price, discounts, credit terms etc.

Promotion: It represents the communication to the customer to increase awareness of a new or existing product and/or create a brand image. It includes advertising, public relations, direct marketing etc.

Place: Also known as the distribution channel, it is the means by which the product is made available to the customer. It includes channel, coverage locations etc.

Based on the industry and market analysis presented in previous sections of this report, following recommendations are developed for each off the marketing mix elements for Product ABC.

4.3.1 Product

It is the physical product or service produced to satisfy the needs of the customer or provides the customer with a solution. It includes among other things the quality, features, brand, packaging, service.

Product ABC is a Summarization based search engine. The search engine performs vertical searches and provides the user with a summary instead of a list of URLs. The summary is in a readable format that provides the user with an answer. The summary further is a series of links to the content provider's web site from where the user can obtain additional information.

The branding would include an easy to remember and appealing name. The image the product would create is that of a 'research engine' that provides answers to the search queries the users have.

4.3.2 Price

It is the value that the customer is willing to pay for the product. It includes the list price, discounts, credit terms etc.

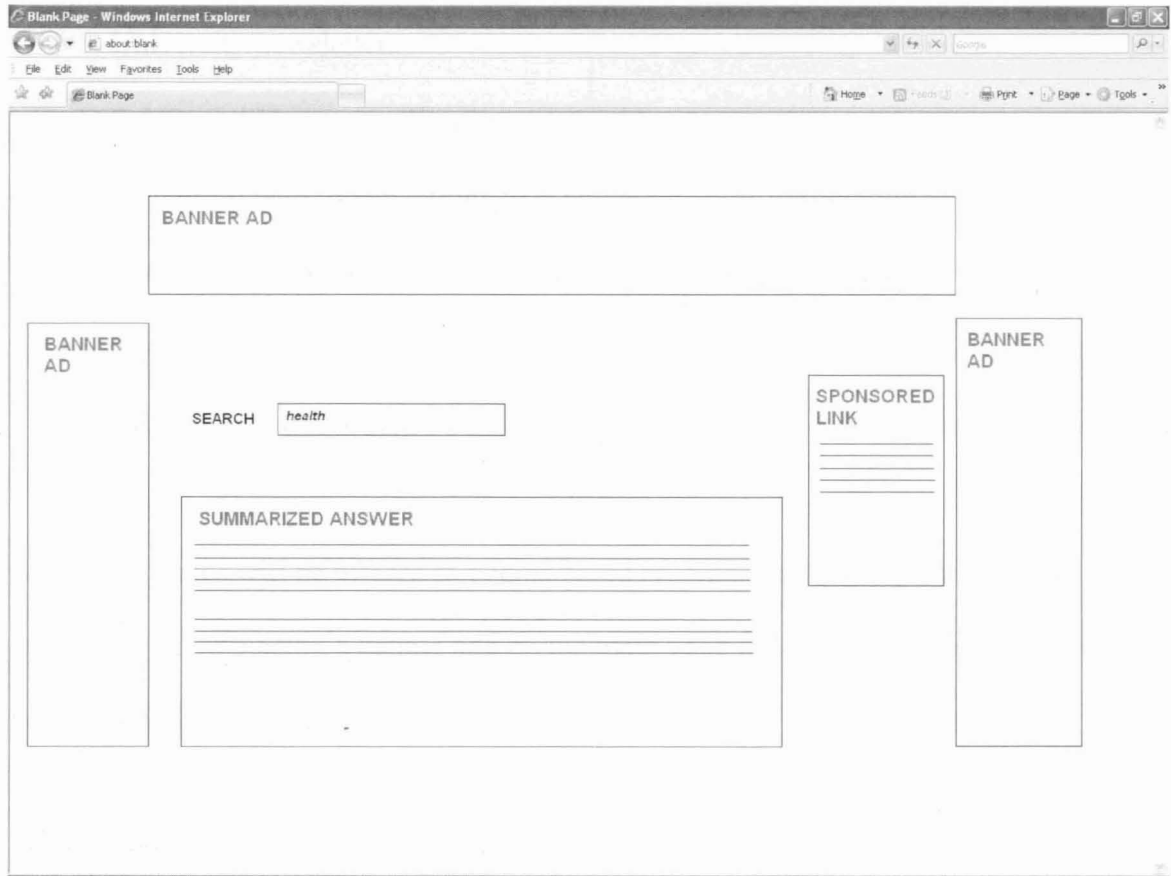
The advertisers will be offered 3 price options to advertise on Product ABC as follows:

On a per click basis for Sponsored links: The search page would return up to five sponsored links along with the summarized answers. These links will be returned based on the keyword search. The advertiser will pay every time a user clicks on one of the links. The cost to the client would be \$0.50 compared to \$0.93 for Yahoo! (Appendix C). This option will only be provided after the demand for the product is established after the product launch.

On a CPM (cost per thousand) for Banner ads: Up to three banners will be displayed based on the keyword along with the summarized answer and sponsored links. The advertiser will pay a fixed amount per thousand impressions which would range from \$10 to \$15

On a per week basis for Banner ads: The main search engine page would hold up to three banner pages for which the advertiser will pay a fixed dollar amount on a weekly basis. The average cost to the client per week would be \$5000.

Figure 6: Banner Ad and Sponsored Link Placement for Product ABC



The advertiser will also incur a one time nominal charge of \$5 - \$30 to setup an advertising account. This will not only weed out the non-serious advertisers but will also provide an additional revenue stream.

4.3.3 Promotion

This would include advertising, public relations and efforts to increase awareness of the product with both the advertisers and users. Some ways to promote the product would include

- Industry events like Search Engine Strategy Conference and Expo 2007
- University newsletters
- Public and University libraries
- Partnering with organizations like Travel Industry Association of America
- Articles and advertising in magazines and newspaper
- Company website
- Other places frequented by the target group including coffee shops like Starbucks etc.

Discounted rates will be offered to clients based on order size and repeat business. For example a client placing a banner add on the main page for 4 consecutive weeks will be provided with an additional week free.

4.3.4 Place

The company website for the PDT would explain the features of the product and its benefits for the user. The website would also include contact information for the advertisers, advertising options and rates.

4.4 Exit strategy

Undoubtedly engaging in any venture without planning for contingencies would be unwise. Keeping that in mind an exit strategy or a Plan B needs to be determined.

While the recommended strategy for commercializing Product ABC is the rapid penetration strategy, the Plan B for the PDT would be to identify companies it can build alliances with and license its technology to other companies. The technology that Product ABC is based on can be used in multiple products which include intranet portals and knowledge management systems. By licensing its technology to companies in areas where efficient summarization can provide significant value to the customer the PDT can ensure that the technology they have created can be employed fruitfully in another product.

5: FINANCIAL CONSIDERATIONS

Carpentier & Suret (2006) describe the key characteristics of new technology-based firms (NTBFs) as:

- their success is linked to difficult-to-value growth options derived from scientific knowledge and intellectual property;
- in the early stages of their life cycle, they lack tangible assets that may be used as collateral; and
- their products have little or no track record, are largely untested in markets, and are usually subject to high obsolescence rates

They also state that these three factors also make it more difficult for a new technology-based firm to obtain financing compared to a normal small business enterprise. Hence, for a pre start-up or a start-up NTBF the objective is to not only launch its products in the market but also obtain financial success by attaining positive cash flows. Apart from obtaining the funds, the company also needs to ensure that it balances the needs of both the financiers and the company owners.

5.1 Expenses

In the process of establishing the company, the PDT will experience expenses related to product development, capital expense for equipment, marketing and business development expense and legal and other service expense. Two year estimates based on inputs from the PDT are summarized in the table 7.

Table 7: Estimated Expense

Expense type	Nov 2007 - Oct 2008	Nov 2008 - Oct 2009
Capital expense	\$83,000.00	\$126,500.00
Salary expense	\$401,250.00	\$450,000.00
Marketing expense	\$100,000.00	\$500,000.00
Operating expense	\$42,520.00	\$81,640.00
Total	\$626,770.00	\$1,158,140.00

The expenses are based on assumptions that by the end of the second year of operations the system allows up to 100 concurrent queries and handles about 50K actual queries/day.

Capital expense: The company should not have significant capital expenses since it would not need to invest in plants or manufacturing facilities. The only capital investment it would have in the 2 year period is the investment it makes in hardware, software and other capital products which would facilitate the development and growth of the company. These would include the Servers, data storage facilities etc.

Marketing expense: The key in the rapid penetration strategy would be the marketing and business development activities that in themselves can be very expensive. These expenses would include advertising and PR cost that would be identified as Promotions in the Marketing Mix.

Salary expense: This would include the salaries for the management/PDT and the developers. Initially the management and development responsibilities may be shared by the same people however as the tasks increase the responsibilities may have to be separated. The management would include the CEO and heads for technical, marketing and finance responsibility.

Operating expense: This expense would include the initial cost of incorporation and fee for filing the patent. Subsequently there would be accounting and bookkeeping expense until the company can hire accountants as employees. In addition, operating expense would include rent for the premises and furniture, stationary, utilities etc incurred because of the day-to-day running of the company.

5.2 Source of Funds

Owners' investment: The owner/s can use their own sources as funds. These would include savings in the form of RRSPs or personal line of credit to fund the company.

Friends and family: These people invest in the company due to the close personal relationship with the owner. The funds are in the form of donations from parents or friends and may result these individuals becoming partners in the firm.

Financial institutes: Institutes like banks which may provide loans and line of credit to individuals and companies.

Angel and private investors: These are individuals with capital available to invest in start-up companies in return for ownership of the company

Venture Capital: These are companies that specialize in certain industries and provide financing to start-up firms that have potential to provide large or quick returns on investment.

Programs and grants: Governments at both Federal and Provincial levels have programs to encourage and support new businesses. Grants and programs are also available through universities to encourage researchers to translate their research into business opportunities.

Table 8: Pros and Cons of Sources of Funds

	Owners	Friends & Family	Financial institutions	Angle investors	Venture Capitalist	Government grants
Pros	Retain control	Least expensive form of funds; More patient;	Get money quickly; Source of short term funds with collateral;	Control mostly retained by company;	Have experience with start-ups; Provide expertise to the company; Single point of funds;	Programs to encourage innovations and start-ups; Provide sources of information
Cons	Personal liability; May be a limited source of funds	May cause stress in relationship; Contributor may have limited business expertise; May insist on stricter terms;	Borrow against personal or company assets; Based on review of past record ; Needs profitable operations;	Harder sell; Limited amount of investment;	Drive hard bargain; May reduce control of the owners; Specialize in specific areas;	Often difficult to obtain; Detailed paperwork;
Borrower's stage of growth	Pre-start-up and start-ups	Pre-start-up and start-ups	Post start-up	Start-up	Start-up	Start-up

5.3 Use of Proceeds

Bhinde (1992) stated 7 basic principles for a start-up to be successful:

- get operational fast;
- look for quick break-even, cash-generating projects;
- offer high-value products or services that can sustain direct personal selling;
- don't try to hire the crack team;
- keep growth in check;
- focus on cash;
- cultivate banks early.

Any funds raised by the firm should be used to realize the above principles. While initially the bulk of the funds would be directed towards R&D and product development, the company needs to ensure that it does not allow unnecessary expenses. All the activities should be directed at getting the product to market and getting a cash flow started and thereby creating value for the stakeholders. The company should aim to access the markets that are easier to target without directly challenging the bigger competitors. While advertising for a startup would be important but getting free publicity and PR should be the focus of the company. This can be achieved by providing articles in industry journals and participating in industry conventions and associations.

5.4 Breakeven

The company would not earn revenues in the first year. The source of the funds will be either owners or investments by angle investors and friends & family. In the 2nd year the company after the product launch the revenue flow would start. The company's main source of revenues would be the online advertisers would either pay for banner space on the search engine web page or pay for displaying their web links on the page returned as a result of a query.

With the objective of breaking even at the end of year 2 the company would require \$1,158,140.00. Table 9 calculates the number of unique visits required annually to break even for 4 different scenarios with variable CPM rate and different rate options. Each scenario assumes that there will be 3 banners on the page with the search as shown in Fig 5 and every visitor will visit 4 pages by clicking on a link. All 4 scenarios assume there is no revenue from the per click option.

Table 9: Break even calculations

	CPM @ \$15 and Per week rate	CPM @ \$10 and Per week rate	CPM Only @ \$15	CPM only @ \$10
	Scenario 1	Scenario 2	Scenario 3	Scenario 4
CPM Rate (A)	\$15.00	\$10.00	\$15.00	\$10.00
Impressions/page (B)	3	3	3	3
Average number of pages visited/user (C)	4	4	4	4
Number of pages visited/month (D)	202,850	304,270	536,180	804,270
Total impressions (E) = (B)+(C)+(D)	2,434,200	3,651,240	6,434,160	9,651,240
CPM based Monthly Revenue (F) = {(A)+(E)}/1000	\$36,513.00	\$36,512.40	\$96,512.40	\$96,512.40
Rate per week (G)	\$5,000.00	\$5,000.00		
Number of banners (H)	3	3		
Per week based Monthly Revenue (I) = (G)x(H)x4	\$60,000.00	\$60,000.00		
Total revenue per month (J) = (F)+(I)	\$96,513.00	\$96,512.40	\$96,512.40	\$96,512.40
Annual income = (J)x12	\$1,158,156.00	\$1,158,148.80	\$1,158,148.80	\$1,158,148.80
Number of unique visits/month = (D)/4	50,713	76,068	134,045	201,068

For Scenario 1, the CPM rate is \$15 and a per week rate of \$5000. To break even a minimum of 50,713 unique visits are required. For Scenario 2 the CPM rate changes to \$10 and the minimum number of unique visits increase to 76,068. For Scenario 3 and 4

there is no per week option and at \$15 and \$10 the corresponding minimum numbers of unique visits required are 134,045 and 210,068 respectively.

Even though the PDT should strive for Scenario 1 but Scenario 2 or Scenario 4 may be more realistic since at a lower rate the rapid penetration strategy might be more effective.

6: RISKS AND ASSUMPTIONS

Any project would face risks and commercializing Product ABC is no different however identifying the risk and their mitigation would be critical for the success of the venture. Some of the risks identified would include

- Inability to create brand identity and differentiation
- Inability to protect IP would cause irreparable harm
- Delay in developing the product
- Difficulty is scaling technology to accommodate increased traffic
- An inferior product with better resources is able to gain competitive advantage and market share
- The bigger competitors in the industry back a similar technology of a competitor
- Unavailability of domain addresses like .ca, .au, .uk would be a cause of concern.

Creating a brand image and differentiating the product would be critical for the Product Development Team (PDT). This would involve influencing the perception of the users. Before the product is developed and introduced to the market the PDT should develop a clear vision and a mission statement which should provide direction to the marketing of the product.

Technology based companies are highly dependent on the protection of their technology. The PDT needs to ensure that it can protect and safeguard its technology using patents and other means. This will ensure any competitor would have a longer

learning curve and hence higher barriers to entry in to the summarization based search engine market.

Since the Search Engine market is very competitive and technology is improving at an incredible pace it is imperative that the PDT get its timing right for introducing the product to the market. The product itself has to be in a stage of development where it can provide value to the customer while the PDT can continue to tweak its performance, improving the quality of response and adding new domains.

Scaling the product could be another important factor in the wider acceptance of the product. The PDT wouldn't like to be in a situation where it has over capacity in terms of the investment in resources if the number of users is very few. On the other hand it would be frustrating for the users if they find that accessing the search engine and getting response to their queries is slow. To mitigate this risk the PDT should monitor the traffic to the search engine on a daily, weekly and monthly basis until they are able to clearly identify user trends. The PDT should also build in flexibility into their system to ramp up their services without incurring a significant cost.

Often the company or the technology that succeeds in gaining market share is not the best technology but satisfies the needs to the customer. A similar situation in case of Product ABC could develop sidelining the product itself. To prevent this, the PDT will not only need to be aware of their position in the market but also be aware of the developments in the market and its competitors.

As and when the acceptance of the product increases it is likely that it will have to be customized for requirements in local markets. This may include use of the search engines in other countries and search for information relevant to specific countries. This

would require development of search engines specific to the country's domain like .ca, .au etc. The PDT will need to ensure that it has these domains already registered to prevent opportunist elements from registering these domains.

While not all the risks can be identified and eliminated but periodic and ongoing risk assessment reviews will help identifying any potential risks. Once identified, measures can be taken to mitigate these risks.

7: SUMMARY AND CONCLUSION

The PDT has developed an algorithm that can summarize information from multiple sources. To commercialize the technology they have developed a Summarization based Search Engine which would, in response to a query, generate an answer. This answer is in the form of a summary that is easy to read, provides substantial information, reduces the requirement of manual search and links to other sources for additional information.

The Search Engine industry is very competitive and dominated by three players i.e. Google, Yahoo and MSN. Not only have they captured the major share of the Search Engine market but also they are amongst the biggest names in the technology industry. In recent times, the number of niche players in the Search Engine industry has also grown substantially. These help in searching for specific subjects like music and pictures. One other Summarization based Search Engine known as Sloth Reader is known to exist and is similar to Product ABC. Some of its drawbacks are documented in the sections above. Other than the Search Engines, sources like Wikipedia and topic specific websites like www.investopedia.com are important sources of information for the users.

The target market for Product ABC can be categorized into Users and Advertisers. The Users are the people who use the Search Engines to look for information. For the users the important search engine features are the speed of information retrieval and the accuracy and relevance of the search. The Advertisers are the people/companies that advertise on the search engine. They are interested in the number of visits to the search

engine site. Based on the market research the typical user was identified as educated and between the ages of 18 – 44 years. Further to ensure that the company can turn a profit at the earliest possible it was determined that the product initially target the search market within the Health topics. For this topic not only were the revenues based on impressions significant but also the users searching for health information would find value in the summarization feature of the product.

To target the market it was determined that the company adopt a rapid penetration strategy. The awareness of a summarization search engine and its benefits is generally low. It would provide the advertisers with a lower advertising cost option. To complement the rapid penetration strategy the marketing mix should build the product as a research engine with a catchy name. The advertisers will be provided with multiple pricing options to acquire the largest number of advertising customers. The product would be promoted such that both the Users and the Advertisers can be targeted.

The expenses for the first 2 years have been estimated and sources of funding have been identified. The first year would be funded by the owners of the company and the product would be launched in the summer of 2008. The 2nd year would start to generate revenues and the break even revenue is determined based on 4 different scenarios of revenue. This further determines the number of unique visits required to generate the revenue.

Finally some risks are highlighted to reduce any hurdles that could obstruct the successful commercialization of the product and operations of the company.

APPENDICES

Appendix A

The goal of this survey is to study customers in each market w.r.t.

(1) can they pay? (2) will they pay? (3) how will they pay? (4) when will they pay?

Please rate each market in terms of the following criteria.

A) The need of background knowledge of the domain in generating summaries.

1 - 5: very high, high, average, low, very low.

B) The amount of text available in the domain.

1 - 5 : 10K level, million level, 10M level, 100M level, billion level.

C) The number of potential customers.

1 - 5: 1 (tens), 2(hundreds), 3(thousands), 4(millions), 5(billions);

D) Sales cycle: time taken from service-out out to money-in.

1 - 5: 1 (years), 2 (months), 3 (weeks), 4 (days), 5 (hours).

E) Potential of making profit by selling (1) services, or (2) advertisements.

1 - 5: very weak, weak, average, strong, very strong.

F) Which categories of **our business** does this market fit in?

Please choose from what we have below and feel free to add more:

1: KM (Knowledge Management),

2: CM (Content Management),

3: Advertising,

4: Publishing,

5: Generic Search,

6: Education,

7: Mobile Services

The response of the PDT has been tabulated below and was critical in deciding the markets that the PDT could potentially target.

Domain	A) Need of background	B) Amount of text	C) Number of customers	D) Sales cycle	E) Monetization		Average (A-E)	F) Corresponding business categories
					Selling services	Ads		
Shopping (electronics)	4	4	5	4	2	5	4.1	3/5/7
Military	2	3	2	1	4	1	2.1	1/2/5
Legal Services	1	3	3	3	4	1	2.5	1/2/5
Natural Resources	2	3	2	2	3	1	2.2	1/2/5
Medicine/Biomedicine	1	3	4	4	3	3	3.0	12/3/5
Financial Services	2	3	3	3	3	3	2.8	2/3/5
Insurance	2	2	3	2	3	2	2.3	2
Travel	4	4	4	3	3	4	3.7	2/3/4/5/7
Health	2	3	4	3	3	4	3.1	1/2/3/4/5
Career	4	3	4	3	4	4	3.6	2/3/4/5
Education	3	3	4	2	3	3	3.0	1/2/4/6
News Publishing	5	4	4	3	3	3	3.8	2/3/4/5/7
Arts (Music)	4	3	4	3	2	3	3.3	2/3/5/7
Library	2	2	3	2	3	1	2.2	1/2/5/6

Appendix B

Advertising Breakdown by Industry, January and February 2007			
Industry	Total Impressions, February 2007 (M)	Total Impressions, January 2007 (M)	Change From Previous Month (%)
Automotive	6,264.0	5,513.4	13.61
Business-to-business	5,706.3	7,795.7	-26.80
Consumer goods	10,196.5	7,875.3	29.48
Entertainment	4,785.8	9,352.4	-48.83
Financial services	71,293.7	71,753.9	-0.64
Hardware and electronics	4,043.8	5,073.4	-20.29
Health	5,668.0	7,193.0	-21.20
Public services	24,049.4	27,244.9	-11.73
Retail goods and services	42,087.1	50,832.8	-17.20
Software	8,886.9	9,731.4	-8.68
Telecommunications	21,252.4	23,213.6	-8.45
Travel	8,086.6	7,887.5	2.52
Web media	66,280.6	66,802.1	-0.78

Source: Nielsen//NetRatings, 2007

Appendix C

Yahoo! Search Marketing recommended a bid of \$0.93 (as shown below) with an estimated 759 clicks based on the following keywords

alternative medicine
alternative health
health and nutrition
health information
man health
womens health
health

1. Account Daily Spending Limit *	Monthly Estimates**
\$ 20	
30 Day Estimated Cost: \$ 600.00	
2. Maximum Bid	Monthly Impressions 134,340
\$ 0.93	Monthly Clicks 759
Based on your Daily Spending Limit we recommend a bid of \$0.93	

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