MEASURING e-BUSINESS ACTIVITIES OF PHARMACEUTICAL FIRMS IN CUSTOMER RELATIONSHIP MANAGEMENT: DEVELOPMENT OF A COMPITITOR ANALYSIS TOOL

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ABSTRACT

Firms need to develop new capabilities to sustain competitive advantage, which include formulating unique, direct relationships with customers. To compete by integrating e-business in all aspects a firm's operations translates into need for developing new skills as traditional ways of competing become insufficient (Porter 2001). Towards this end pharmaceutical firms are using the Web to institute relationships with customers (physicians and patients). Our research focused on developing a technique that would allow for benchmarking web activities of various firms in the US pharmaceutical industry based on a model developed by Chen (1996) for competitor analysis. Our technique attempts to avoid the typical blind spots of competitor analysis as identified by Zajac and Bazerman (1991) and Zahra and Chaples (1993). We used a method called Analytic Hierarchy Process (AHP) and analyzed seven pharmaceutical firms, selected by executives from the pharmaceutical industry, to compare their web activities. Results suggest that Merck, Novartis and Eli Lilly were far ahead in the web activities related to the customer relationship management (CRM). Warner Lambert had more focused efforts in patient relationship where as Eli Lilly had a very high focus on physician relationship. Implications and future research directions have been discussed.

Key Words: e-Business Strategies Pharmaceuticals CRM Competitive Intelligence
Unique relationships with its customers can be one of the most important sources of competitive advantage (Fleisher and Bensoussan 2002) which leads a firm to create value. Understanding the way a competitor manages its relationship with its customers, is a critical component of competitor analysis. The concepts of competitor analysis and competitive intelligence have been around both in strategic management as well as marketing literature for more than two decades (Amit, Domowitz and Fershtman, 1988; Chen, 1996; Baum and Korn, 1996). The ever growing digitization of information and the availability of the same through the Internet makes the task of competitor analysis highly challenging (Vibert, 2000). The complexity of the task has increased because now the analyst in charge of competitor analysis has to identify and separate web-based information into different categories such as legal information, regulatory information, corporate information, and so on.

Zahra and Chaples (1993) suggest that a good competitor analyst needs to match data sources with current methods to achieve to be successful in conducting competitor analysis. We draw from the rationale afforded by Joshi and Yermish (2000) that the Internet has made business processes more transparent. Further, this transparency provides a manager in-charge of competitor analysis with new sources of raw data points which need to be analyzed in light of frameworks that are current and appropriate (Zahra and Chaples, 1993).

In the present paper we integrate ideas by Porter (2001) and Zahra and Chaples (1993). While Porter (2001) has focused on the impact of the Internet on complete value chain, Zahra and Chaples (1993) have focused on improving competitor analysis by developing appropriate competitor analysis tools to suit the data sources. By integrating these two concepts we wish to achieve dual benefits. Our first goal is to conceptualize and measure the extent of the
web activities in managing the customer relationships. Second, our focus is to present this measuring technique as a tool that allows for conducting competitor analysis by providing benchmarking of web activities of a firm against its competitors. We apply the tool to pharmaceutical industry as an illustration.

We feel it is important to examine the web activities of firms at a time when the euphoria about the Internet has died down but the realization about the importance of the Internet has taken firm roots. Both, managers and academics alike feel that the phenomenon of e-business presents a shift in the business models for almost all companies because the Internet affects the entire value chain for virtually every industry (Porter 2001). According to Porter, a brick and mortar firm (a traditional firm not using the Internet technology extensively) will be able to maintain its competitive advantage only if it integrated the Internet to institute relationships with its existing and new customers. Sharing information and information processing across organizational boundaries has been in existence since the 1960’s and certainly has proliferated with the onset of advances in computer and telecommunications technologies. But the introduction of the e-business has taken these information technologies to different levels and thus has transformed the business model in that the traditional relationships with customers, suppliers, contractors, competitors and partners are now being reexamined and reconfigured.

According to Zahra and Chaples (1993), a firm needs to continuously update analysis about its competitors. This is particularly helpful in environments that may have changed drastically. In this paper, we present the arguments that the environment of pharmaceutical industry has changed tremendously and rapidly and hence it is critical to develop new tools of measuring competitor activities related to customers. In particular, we focus on the increasing
use of the web to perform customer relationship management (CRM) by the large pharmaceutical firms. This focus on CRM is consistent with Tulskie et al. who concluded that ‘considering the concentration of e-marketplace activity appearing in the healthcare industry, particularly aimed at organizing the market power of the buyers, it is not surprising that medical services provider would also be keenly interested in maintaining close relationship with its customer base’ (2000:3).

In addition, Zahra and Chaples (1993) suggest that different tools for competitive analysis should be used for different situation since no single competitor analysis system can be applied universally to all situations. Based on the literature review and our conversations with several active pharmaceutical industry executives, it is our assertion that there are no sophisticated tools available to measure a competitor’s web activities in the pharmaceutical industry. Thus, this study develops a framework that would enable a pharmaceutical firm to measure CRM related web activities of its competitors.

We first look at theoretical background on competitor analysis to establish the foundation for our paper. We then address the internal and external environmental changes in the pharmaceutical industry which are making it more critical than ever for these firms to use the web-based activities to develop a better customer relationship management. The subsequent sections explain the methodology and results to analyze the propositions developed in this paper. The paper ends with implications for managers and future research.

The contribution of this paper is to provide an innovative yet a rigorous way to compare firms’ web activities. A simple examination of a competitor's web activities could miss the depth of a competitor’s web-strategies, and a simple comparison of the attributes of web sites may
not reflect the overall strategy followed by a firm. Our approach goes beyond the simple examination of a firm’s website because a simple approach could only provide a snapshot of the web activities of the competitors. To create an objective and structured measure to assess the web activities of a firm, we apply Analytic Hierarchy Process (AHP) in this study with a specific focus to measure CRM among the top pharmaceutical firms in the industry.

**Theoretical Background: Competitor Analysis**

To compete in the realm of e-business requires development of new skills for companies when traditional ways of competing may become obsolete if strategies of firms do not integrate the new technologies (such as the Internet) with the traditional competitive advantages and the competitive behavior (Porter, 2001). Firms need to develop new capabilities to sustain competitive advantage (Prahalad and Hamel, 1990; Teece, Pisano and Shuen 1997).

A major component of these new capabilities focuses on building unique and direct relationships with customers. As the need for new capabilities grows so will the need for better competitor analysis to avoid any blind spots in the competitor analysis. When an industry goes through a major change because of an introduction of a new technology, traditional models of competitor analysis may produce blind spots (Zahra and Chaples, 1993, Zajac and Bazerman, 1991). Based on the literature on "blind spots" in competitor analysis (Zahra and Chaples, 1993, Zajac and Bazerman, 1991), we postulate that there is a need for new tools for competitor analysis. The new tools must be able to incorporate the new realities of the knowledge-based economy and the Internet technologies.
For a firm to incorporate the Internet and build web activities along its value chain as part of its technology strategy is a major decision. Technology strategy includes components of timing, commitment, scope and leadership stance (Burgleman, Maidique and Wheelwright, 1996). Becoming an Internet savvy firm from a traditional firm can vary along any of these dimensions of technology strategy. Wilcox and Plant (2001) based on a survey of 58 global firms conclude that some brick and mortar firms seem to be benefiting from the Internet as they have been able to use the Internet to shift their strategic focus from technology to markets and consumers. However, there are many firms still bound by traditional ways of conducting business in a context of firmly embedded managerial styles, organizational structures and corporate cultures (Leonard-Barton, 1992).

The resource-based view (RBV) of the firm (Prahalad and Hamel, 1990; Barney, 1991; Leonard-Barton, 1992) posits unique and inimitable organizational capabilities lead to competitive advantage. Firms develop and accumulate these capabilities and thus they are embedded and difficult to alter. Firms perform at different levels with different profitability profiles due in large part to differences in their organizational capabilities. Thus, according to RBV arguments the ability to pick a resource (or let go a resource) determines the firm's ability to generate value (Makadok, 2001). Although capabilities may evolve over time and dynamically change with the exigencies of the environment (Teece, Pisano and Shuen, 1997), some capabilities are so embedded that they are difficult to change and may become core rigidities (Leonard-Barton, 1992). Porter (2001) suggests that firms will have to develop new capabilities that would allow them to integrate the benefits of the Internet with their existing capabilities so as to make sure that their core capabilities do not become core rigidities.
Using resource based view of the firm, Chen (1996) has developed a framework to understand competition and predict rivalry. The present study acknowledges the contribution of Chen’s framework and uses as a starting point to incorporate the web activities to analyze competition, particularly in the area of customer relationship in light of the Internet. Recently, some researchers (Pawar and Sharda, 1997) have propagated the use of the Internet for competitive intelligence. The effective use of the Internet providing a firm with information about its competitors’ customers, products, partnership and alliances is essential in the process of successful competitive intelligence. This effective competitive intelligence would allow a firm to be nimble and flexible, and to create strategies that are in tune with the changing market place (Mohr 2001).

**Customer Relationship Management in the Pharmaceutical Industry**

The pharmaceutical industry, as many other industries, considers launching new products to be essential to succeed in the marketplace. However, the research and development process for a new pharmaceutical product could be about twelve years long and could cost around $500 million (MedAd News, September, 1999). When the product comes to the market it is left with only 8 years of effective patent life (total patent period for a product is 20 years) and hence firms need to recoup their investments within that short time. Hence, marketing has always been critical in this industry. A study conducted by Accenture Consulting on the pharmaceutical industry found that competitively superior marketing and sales capabilities can and do drive superior performance. Based on an industry-wide survey they found that
marketing and sales capability performance accounted for 42 percent of the variation in financial performance across business units in the study (George and Blumberg 2000).

The key to success is to develop marketing and sales strategies that are customer focused. Traditionally, pharmaceutical firms tend to focus primarily on developing new products and the business model is that superior products would sell by themselves. But, with the Internet in the landscape, the future seems to depend upon how well pharmaceutical firms understand and satisfy the needs of the customer. Firms are increasingly devoting resources to becoming invaluable partners of their customers. Thus, CRM systems using the Internet are being implemented to optimize every customer experience and interactions with pharmaceutical firms. Consider the following quote from Jan Leschly, CEO of SmithKlineBeecham in the FDA Pink Sheet, May, 1999:

My bet is (that) in the next five years you will see the focus going more and more to the consumer and the patient. The consumer(s) ... want speed, they want comparability, they want price comparison, they want service, they want choice, they want freedom and they want control.

Customer relationships have taken on new importance in light of the growth of the Internet. Many industries, such as banking and retail, are already experiencing the transformation of the relationship between a firm and its customers due to the e-business initiatives taken by the competitors in these industries. However, the health care industry is only beginning to feel the impact of the change brought about by the Internet (Tulskie, Goulet and Bagchi, 2000).

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1 We define customers as any party that ultimately drives demand for pharmaceutical products. In the present study both patients and physicians are treated as customers.
The pharmaceutical industry has in recent years begun to use direct-to-consumer (DTC) advertising to enhance the “pull strategy” by encouraging patients to request specific pharmaceutical products from their physicians. Yet, as the DTC is becoming more popular, more pharmaceutical companies are assessing the viability of other channels of communication and the Internet is one obvious choice. Unlike other mass media channels, the Internet allows for creating a one-to-one relationship with the consumers (Tulskie, Goulet and Bagchi, 2000).

In order to remain competitive, pharmaceutical companies may (1) adapt existing DTC advertising skill sets to integrate use of the Internet; (2) continue to monitor and measure the results of their DTC advertising, specifically Web-based initiatives; and (3) leverage advanced technologies and lessons learned on a continual basis. It is essential that firms continue to comply with current FDA regulations and act responsibly amidst this uncharted ground. But, what pharmaceutical companies should keep in mind, however, is that DTC advertising can inform, educate and bring together professional and patient consumers and build lasting and meaningful relationships.

Another trend that is shaping the changes in the competitive environment of pharmaceutical firms is a convergence of information technology and innovations of new therapies including genomics leading to rapid drug development. With exploding new information, customers (both patients and physicians) want to know and learn about the options. Pharmaceutical firms see this as an opportunity to identify revolutionary new ways of communicating and connecting with customers.

The combination of customer focus and technological convergence has caused seismic changes in the strategies of the major pharmaceutical firms. While the industry is looking to shift
the gears of competition, the arrival of the Internet technologies makes it a compelling ground for examination, particularly from a competitive analysis perspective. But the question is about the availability of tools in the field of competitor analysis that pharmaceutical firms could use to monitor the actions of firms in the industry so as to benefit from the Internet technologies.

It is understood that many established pharmaceutical firms have an Intranet for inter-company communications, information dissemination, and the like. It is also understood that many established pharmaceutical companies have developed web-based relationship upstream along their value chain. Some of these practices are not very visible to the public. For example, many companies use the Web to conduct and enhance clinical trials and the New Drug Application Submission process. Moreover, pharmaceutical companies are using the Web to order supplies and make the manufacturing processes more efficient. But, these companies are also developing a Web presence to their primary customer base - the customers who ultimately drive demand: physicians and consumers - in light of the many environmental changes impacting the pharmaceutical industry as described above. Competition among pharmaceutical firms for brand recognition is heating up and e-business is the vehicle to get to their customers (Tulskie, Goulet and Bagchi, 2000).

To summarize, the growing Internet will impact many aspects of a pharmaceutical firm. Particularly, in the customer relationship area, the impact of the Internet will lead to a shift from mass marketing to targeted (one to one) interactive marketing (Mougayar, 1998; Brown 2000) and shifting from paper catalogs to electronic catalogs (Kosiur, 1997). This change in customer relationship management can be inferred because rather than treating their customers as targets
the firms are now treating customers as partners (Komenar 1997), and firms are moving away from segmentation towards the creation of communities (Hagel and Armstrong, 1997).

We assert that the Internet would transform the customer relationships of pharmaceutical firms and thus making it critical to understand the Web activities of these firms. Due to the newness of the emerging Internet field there are no existing measures to gauge the Web activities of a firm. The specific focus of this paper is to develop such a measurement tool for customer relationship management activity in the pharmaceutical industry. This is important for two reasons. First, as per the seven-step model proposed by Ware, Gebauer, Hartman and Roldan (1998) a critical step in creating successful web strategy is to be able to self-assess and learn to adjust and improve from one’s own web activities. Second, and more importantly, the Internet could provide a basis for conducting competitive intelligence and allow for the comparison of a firm to its competitors’ web activities.

**Building a Competitive Analysis Framework and Development of Propositions**

The essential step in a competitor analysis is defining a competitor for the focal firm. Researchers have suggested that competitors may be defined either using the subjective perception of managers and employees of a focal firm or objectively across certain industry standards (Abrahamson and Fombrun, 1994; Porac and Thomas, 1994; Chen, 1996; Porter, 1980). Chen (1996) has further suggested that many times these approaches (subjective or objective definition of a competitor) are complementary to each other. Therefore, in the present paper, we have used subjective measures of competition complementarily with objective measure of defining the competition. Our approach was in two steps. In the first step, we used a subjective approach and subsequently we used an objective approach to further delineate the
competitive activities in the pharmaceutical industry in relation to the growing impact of the Internet.

Towards the first step, we used the framework proposed by Chen (1996). His integrative framework of competitor analysis combines resource factors along with market factors. Chen’s article introduces two firm-specific, theory based constructs: market commonality, developed from the literature on multiple-point competition, and resource similarity, derived from the resource-based theory of the firm. Market commonality is defined as the degree of presence that a competitor manifests in the markets it overlaps with the focal firm. A given competitor's market commonality with a focal firm is conditioned both by the strategic importance to the focal firm of the shared markets and by that competitor's strength in these shared markets. Resource similarity is defined as the extent to which a given competitor possesses strategic endowments comparable, in terms of both type and amount, to those of the focal firm. The understanding of resource similarity is important for competitive advantage because firms with similar resource bundles are likely to have similar strategic capabilities as well as competitive vulnerability in the marketplace. Similarly, firms with divergent resource bundles are likely to have diverse competitive repertoires to draw on because of the unique profiles of their strategic resources.

According to Chen (1996), when two firms are determined to have similar resources as well market commonality, they could be termed as 'direct and mutually acknowledged competitors' (p.108). Using this conceptualization, we labeled seven pharmaceutical firms that are treated as direct and mutual competitors based on market commonality and resource similarity. We contacted three executives working for the competitive intelligence department of
a pharmaceutical firm (this firm was ranked as one of the top 10 pharmaceutical firms in the world and is headquartered in the Northeast Region of USA). These were senior level executives (Senior Director of Competitive Intelligence, Director of Competitive Intelligence and Assistant Director of Competitive Intelligence). They were asked to identify pharmaceutical firms that were similar in resources and had common market activity. Based on the guidelines created by the authors, the executives identified seven firms and described these firms as direct and mutual competitors. Theses firms are represented in Figure 1, which was created as per the approach first introduced by Chen (1996). The Names and web addresses of the seven firms are listed in Table 1.

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Insert Figure 1 and Table 1 About Here
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According to the subjective approach these seven firms are all direct and mutual competitors of each other. Thus, based on this subjective approach we would propose the following proposition.

P1: The direct and mutually acknowledged competitors will exhibit similar strategies in adopting the Internet with regards to the customer relationship management in the pharmaceutical industry.

However, we could argue that the changes in the Internet has changed the CRM in the pharmaceutical industry very drastically and hence the adoption of the Internet strategies would not be common across the firms in this industry. This is argument is consistent with the idea of avoiding blind spots when the industry environment drastically changes (Zahra and Chaples, 1993, Zajac and Bazerman, 1991). Thus we propose an alternative proposition which states
that there will be a difference among these seven forms in their adoption of the Internet in with relationship to their CRM.

P2: The direct and mutual competitors will show a difference in adoption of the Internet for CRM purposes.

Further, as argued earlier, two main aspects of CRM in the pharmaceutical industry are patience and physicians. If our arguments hold true about avoiding blind spots then it would be argued that the difference of ranking among the firms focusing on patience in adopting the Internet will be very different as compared to the firms that primarily focus on physicians when thinking of the CRM. Thus, we further postulate the following.

P3: The seven firms labeled as direct and mutual competitors will differ in their CRM activities in relationship to the growth of the Internet based on whether their focus is on patients versus physicians.

Drawing from Zahra and Chaples (1993) and Zajac and Bazerman (1991) we argue that to test propositions 2 and 3 there is a need for a new tool. We also have to keep in mind that the new tool must be able to incorporate the new realities of the knowledge-based economy and hence to test these propositions, we will use Analytic Hierarchy Process (AHP). The details of how AHP was used are provided in the methods section. In absolute terms, all the seven firms may adopt the Internet very well but our tool, using AHP, offers a way to obtain relative ranking for competitor analysis purpose. This process make sure that competitors once considered direct and mutually acknowledged may part their ways if there is a major shift in the external environment faced by these seven firms.
Research Methods: Applying AHP

Young (1989) has suggested that a manager engaged in competitive analysis has to draw data from varied sources. These sources may include annual reports to the shareholders, government statistics, tax records, and bank data, all of which are available in the public domain. Thus, to be more interpretive and comprehensive, as suggested by Young, we gathered data from many independent sources and triangulated the data to apply to our framework.

The data for our analysis were obtained from press releases issued from January 1993 and up to December 1999 concerning the web or Internet strategies of the seven pharmaceutical firms included in our study. These firms are among the top fifteen revenue generators in the pharmaceutical industry for the year 1998 (MedAd News, 1999). We collected press releases about our sample firms as well as announcements made by any other firms with whom one of the seven sample firms were affiliated through either joint ventures or strategic alliances. As an additional source of information, we had several discussions with pharmaceutical executives actively involved in the application of the Internet to the pharmaceutical industry. The executives were asked to assist us in interpreting web activities of the seven firms in the sample.

Content Analysis of the Raw Data

Pharmaceutical firms have two kinds of customers, namely; Physicians who prescribe the medication and patients who use the medication. As the second step of our data collection, we content analyzed each announcement to determine if the new web activity pertained to physicians or patients or both. The third step in data collection involved assessing the exact intention of the web activity. To categorize the intention, we modified a typology used by Health
Care Internet reports published by *CIBC World Markets* (1999). Based on this report, every announcement in our sample was classified as one of the following four types. a) If web activity was meant to be only an information repository then it was listed as “Content Type” (or referred to as static e-content). b) If the content was created to enable communication between the pharmaceutical firm and the customers it was listed as “Content Access” (or treated as dynamic e-content). c) If the announcement was analyzed to lead to web activities that facilitate transactions, the announcement was listed as “Connectivity”. d) Finally, if the announcement indicated that a firm will have web activities that lead to generation of revenues, such announcements were classified as “Commerce” activities.

These four classifications were carried out to reflect basic intention of the pharmaceutical firm while engaging in a specific web activity. Our classification is similar to used by other academic researchers (c.f., Geiger and Martin, 1999). The content sites are basically information dissemination sites. In the healthcare industry, the goal of these sites is to promote wellness for the patient and facilitate information sharing for physicians. For the patients, content sites use the Web as an information repository and communications enabler (e-mail). Examples of content on these sites are: medical dictionaries, list of diseases/treatments, online tools, and access to current medical news. For physicians, content sites typically provide basic Internet services (such as being an ISP) and may for example, create virtual private networks for groups of physicians, provide medical information and continuing medical education (CIBC World Markets, 1999).

Connectivity sites or “transaction enabling” sites, use the Internet technology to link healthcare participants (physicians, payers, suppliers and patients) in order to improve
communications and facilitate transactions. A web activity classified as “Connectivity” pertains to a dialogue among payers, providers and patients using Internet-based networks. The American healthcare system is complex, burdened with paperwork, and lacking standardization. Providers, payers and patients waste millions of dollars each year on repetitive, unnecessary paperwork and procedures (CIBC World Markets, 1999). The use of the Internet towards connectivity may assist pharmaceutical firms in overcoming some of these problems. Commerce sites or “e-commerce” sites use the Web as an alternative medium to sell products to consumers. These sites can be “business to business” (B2B) or business to consumer (B2C).

**Development of the e-Business Activity Measure for CRM**

The proposed e-Business measure to compare web strategies for CRM activities of the pharmaceutical firms was created using the Analytic Hierarchy Process (AHP). This process allows the comparison of the Internet strategies and adoption of the Internet technologies by applying different evaluative criteria, such as physician focus versus patient focus. AHP has been applied when ranking or priorities are based on different evaluative criteria (cf. Golden, Wasil & Harker, 1989). This methodology is considered superior over other scoring techniques because the weights determined in this scoring system are not arbitrary but use a ratio scale for personal valuation (Liberatore, 1989; Suh, Suh and Baek, 1994). Thus, AHP involves “experts” who understand an industry well or have reason to assign judgmental values to ranking or selection process, and in the process, AHP provides a framework that is comprehensive, logical and structured (Mitchell and Wasil, 1989). The benefit of such a process is that each individual can articulate his/her preferences in a manner that is understood by all (Lockett, Hetherington, Yallup, Stratford and Cox, 1986). Considering all the benefits listed above, and specifically
because AHP allows for bringing in competing objectives having both tangible and intangible values (Suh, Suh and Baek, 1994), AHP was considered to be an appropriate technique for this study. While this technique has been applied to several decision-making situations, its use in this study, to achieve web-based competitive intelligence ranking criteria is novel and innovative.

We used two faculty members as industry experts who have studied the industry and have interacted with many executives from the pharmaceutical industry. They were provided with the content analysis of the web activities of all the seven firms in the sample. Each expert ranked the web activities of a firm in relation to the remaining six firms (in a pair wise comparison format). Once the value assignments were received from the experts, the necessary steps to calculate the weights at each level were conducted and the details are provided in the results section.

**Results**

The AHP is an interactive, structured process that brings together the experts as a group and integrates “objective” market data with subjective judgment. The process is based on three steps:

1. **Structuring the problem as a hierarchy of levels.** In constructing the hierarchy, the decision makers generate creative options and identify the criteria for their evaluation.

2. **Evaluating the elements at each level along each of the criteria at the next higher level of the hierarchy.** The decision makers used a nine-point scale to make the evaluation and base it on a series of paired comparisons.

3. **Weighting the option.** The model uses a weighting algorithm to determine the importance of their options in relation to multiple criteria or objectives. The algorithm is based on the idea that pair wise comparisons recover the relative weights (importance) of items or objects at any level of a hierarchy.
The AHP provides weights that make easy to rank firms at each level of hierarchy of choice (Suh, Suh and Baek, 1994). For our analysis, we had three different levels of hierarchy in determining the use of the Internet technologies by pharmaceutical firms. Tables 2, 3, and 4 reflect different hierarchical levels of analysis and the final aggregation to test our propositions is listed in Table 5.

The results in Table 2 indicate that the industry experts weighted web activities by pharmaceutical firms focused towards physicians three times higher than activities focused towards patients. At first, this may seem peculiar, but it does fit well with the pharmaceutical industry where most prescription drugs have no value if physicians do not prescribe them. Interestingly, the classification of website with “content-type” (static content) or “content-access” (dynamic content) or “connectivity” or “commerce” was weighted differently by experts depending on whether the level 2 classification was patient or physician. The most striking difference was about focus on providing “commerce” abilities in a website. The experts ranked “commerce” to be most significant if it was physician focused but “commerce” was least important if the website’s focus was patient oriented. Once again, the regulated nature of this industry would explain such a drastic difference in the preferences. The pharmaceutical firms could provide commerce activities such as prescription online to physicians or continuing education certification to physicians. On the other hand, they have very little commerce activities to offer to patients directly. Even if these firms had something to offer through OTC (over the counter) drugs, their present channels of distribution contracts may prohibit them to use the web to directly deal with the patients.

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Similarly, “connectivity” is ranked highest in the web activities with patient focus with a weight of 0.566 whereas the weight given to “connectivity” in physician focus is less than half at 0.266, at second place. The difference for connectivity weights once again might be based on the behavior difference between physicians and patients. For patients (particularly, the ones suffering from Chronic diseases) connectivity with pharmaceutical firms may become a source of emotional support as the connectivity may allow them to create a virtual community of people who are suffering from similar ailments. On the other hand, for physicians, the connectivity issue does not get high weight because it may be viewed as a distraction rather than assistance since their job puts a tremendous level of time pressure on them.

Table 3 provides the detailed rankings for each firm at level 4 sub-classification (i.e. at an individual firm level). At this level, the report reflects on the ability of AHP to provide a fine-tuned differentiation in the rankings of sample firms. Merck and Novartis are consistently listed among the top three on seven out of eight ranking criteria. Also, it is evident that Glaxo and Johnson & Johnson have not been as aggressive as their peers when it comes to focusing on the Web activities. These two firms are not ranked among the top three on any one of the eight criteria. Table 4 provides aggregate ranking after considering all the relative weights up to level 1. Hence, it provides two sets of ranks of web activities since there are drastic differences in patient focus and physician focus.
One of the interesting results from Table 4 is that Eli Lilly, which is ranked at the bottom in the patient focus is ranked second in its web activities when evaluated from physician focus. This may be due to the fact that the corporate strategy of Eli Lilly focuses on selling through physicians and not through direct consumers. Warner Lambert, on the other hand, seems to have primary focus on direct customers (unlike Eli Lilly) through its OTC products and hence is ranked second in the patient focused web activities. Merck and Novartis are consistently ranked among the top three within both patient and physician focus. This indicates that they are evolving their web strategies on both fronts. Thus, with the use of AHP, the level 4 rankings help a person conducting competitor analysis in understanding very specific moves by each of these firms.

Finally, Table 5 provides an overall grand ranking of all the seven firms’ web activities. This ranking is very similar to the ranking achieved from physician focus due to the fact that our experts have weighted physician focus three times over the patient focus when assessing the web activities of a firm. Based on this table we notice that our two alternative propositions (P2 and P3) are supported completely as Merck is ranked at the top with a weight of 0.348, followed by another group of firms - Eli Lilly and Novartis with scores of 0.212 and 0.184 respectively. Glaxo is at the bottom of the pile with a score of 0.044 and Warner Lambert with a score of 0.087 ranks higher than Glaxo but lower that Eli Lilly and Novartis. The remaining two, Pfizer and Johnson and Johnson with scores of about .06, are very much behind the ranking obtained by Merck supporting our alternative propositions 2 and 3 and further indicating that our null proposition (P1) cannot be supported.
Discussion and Conclusion

The basic aim of this paper was to develop a competitor analysis framework that would allow for understanding the competitive behavior of pharmaceutical firms with a specific focus on the utilization of the Internet. In doing so, we adopted an existing competitive analysis framework proposed by Chen (1996) for use with comparing web activities of large pharmaceutical firms with respect to their CRM strategies. Additionally, we demonstrated the usefulness of AHP for benchmarking web activities of firms in a competitive setting. The rankings obtained in Table 5, as an outcome of the application of AHP, indicate that our alternative propositions (2 and 3) were supported. We postulated that the Internet will dramatically alter the competitive dynamics in the pharmaceutical industry and as such, in times of uncertainty, new methods of competitive analysis are needed (Zahra and Chaples, 1993). Further, Furrer and Thomas (2000), advocate that an approach that uses frameworks with focus on key variables is preferred when evaluating rivalry and competitive dynamics during uncertain times because of the need for analyzing several factors. Accordingly, we have demonstrated that for the pharmaceutical industry, in evaluating customer relationship management CRM in light of growing Internet technologies, focusing on patience versus physicians led us to explore that the involvement of these firms with the Internet technologies is not uniform but it is widely different. While we acknowledge that many other factors are involved in a firm's choice of the Internet technologies, these two factors seem to assist well in understanding the underlying trend of activities related to the Internet technologies.
Thus, our approach provides a manageable tool in plethora of information for a competitive analyst. When applied in the pharmaceutical industry, we find that the sample firms are approaching customer relationship management from different directions. Merck, Eli Lilly and Novartis are by far adopting the Web as a tool for customer relationship management. On the other hand, Glaxo and J&J, relatively speaking, may not have considered the Internet technologies as a critical tool in building and maintaining customer relationship because their current systems of CRM might be performing as desired. This finding is consistent with Evans and Wurster (2000) who suggest that firms may resist new Internet technologies if they have been strongly entrenched and committed to their legacy systems.

For managers, these results suggest that perhaps to gain a competitive edge in the realm of CRM through the Internet technologies, firms need to monitor their web activities vis-à-vis their competitors. However, a firm's web strategies must be aligned with the corporate strategy as shown in the case of Eli Lilly. Thus, from competitive intelligence perspective, a firm has to carefully choose the area of its efforts on gathering and analyzing information related to any specific competitive activity. For example, if a firm primarily views itself to be a close competitor of Eli Lilly, it needs to follow the web activities of Eli Lilly. Alternatively, a firm that considers itself similar to Warner Lambert might focus on patient-related web activities and not so much on the physicians oriented web activities. One of the advantages of using competitor analysis as described in the present study is that it provides a tool for benchmarking and rank-ordering of a group of competitors. This is an essential ingredient for successful competitive intelligence. By using AHP, a firm can fine tune its competitive analysis at different hierarchical
levels, as demonstrated in Tables 2, 3, 4, and 5. This would certainly be useful in the
development of a firm's competitive strategies and customer relationship management.

There are implications from the research aspect too. With the growth of the Internet,
observing and analyzing competitive behavior will become more complex (Vibert, 2000) yet
business process of competitors will become more transparent to firms that use competitive
intelligence in conjunction with the Internet technologies (Joshi and Yermish, 2000). In this
paper, we have demonstrated that while there are no existing tools that facilitate competitive
analysis by capturing the impact of the Internet growth, yet with extensions and modifications of
existing tools, such as Chen’s (1996) framework, it is possible to create new frameworks that
will help assess changes in a firm's strategic orientation due to the Internet technologies.

This study is not free from limitations, which provide opportunities for future research.
For instance, we have depended very heavily on publicly available financial information to
subjectively separate the seven pharmaceutical firms into four quadrants. Secondly, the analysis
in the present paper focuses on rank-ordering but does not attempt to map which strategy or
which kind of web activity would lead to better performance. Thus, future research should
include measuring and evaluating a comprehensive Web strategy along the entire value chain
(Porter 1980) and then applying a technique like AHP to rank order the importance of each
value chain activity in light of the Internet technologies adoption by the firm.

The present study attempted to create an e-business activity measure for CRM. In the
same fashion, if several independent measures of e-business activities are developed along each
dimensions of the value chain, then we will be able to relate the impact of e-business on
outcome variables, such as productivity or economic performance. Towards this end, the
present study has successfully led to an initial building block. Porter (2001) has suggested that only firms that integrate the traditional activities with the Internet technologies will be successful in the long run. Similarly, we argue that many existing techniques and methodologies of conducting competitive analysis will have to be modified for better understanding the impact of the Internet technologies on the competitive dynamics of rival firms.
REFERENCES

George, P. & Blumberg D. 2000. How much are marketing and sales capabilities really worth?: What every Pharmaceutical Executive Should Know, *www.accenture.com*


Figure 1: Identifying Direct and Mutual Competitors
Subjective Evaluation

<table>
<thead>
<tr>
<th>Hi Market Commonality</th>
<th>Low Resource Similarity</th>
<th>Hi</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Eli Lilly, Glaxo Johnson and Johnson, Merck, Novartis, Pfizer, Warner Lambert</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Based on Chen (1996)
### Table 1: Sample Details

<table>
<thead>
<tr>
<th>Name of the Firm</th>
<th>Website address as of 1999*</th>
<th>Revenues for 1999 in Billion US$**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eli Lilly</td>
<td><a href="http://www.elililly.com">www.elililly.com</a></td>
<td>10.00</td>
</tr>
<tr>
<td>Glaxo</td>
<td><a href="http://www.glaxo.com">www.glaxo.com</a>*</td>
<td>n/a</td>
</tr>
<tr>
<td>Johnson and Johnson</td>
<td><a href="http://www.jnj.com">www.jnj.com</a></td>
<td>27.471</td>
</tr>
<tr>
<td>Merck</td>
<td><a href="http://www.merck.com">www.merck.com</a></td>
<td>32.714</td>
</tr>
<tr>
<td>Novartis</td>
<td><a href="http://www.novartis.com">www.novartis.com</a></td>
<td>16.94</td>
</tr>
<tr>
<td>Pfizer</td>
<td><a href="http://www.pfizer.com">www.pfizer.com</a></td>
<td>25.50</td>
</tr>
<tr>
<td>Warner Lambert</td>
<td><a href="http://www.warnerlambert.com">www.warnerlambert.com</a>*</td>
<td>n/a</td>
</tr>
</tbody>
</table>

** Median

? Please note: Some of the firms since our study have either merged or taken over and the web address may not be valid.

Table 2: Weights of classification based on AHP

<table>
<thead>
<tr>
<th>Level 1: Activity</th>
<th>Level 2: Customer Focus</th>
<th>Level 3: Website classification</th>
<th>Level 4: Individual firm level rankings using 3 levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Web Activity</td>
<td>Patient focus (Weight 25% or 0.25)</td>
<td>Content Type (0.143)</td>
<td>Rankings within content-type with patient focus</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Content Access (0.240)</td>
<td>Rankings within content-access with patient focus</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Connectivity (0.566)</td>
<td>Rankings within connectivity with patient focus</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Commerce (0.051)</td>
<td>Rankings within commerce with patient focus</td>
</tr>
<tr>
<td></td>
<td>Physician focus (Weight 75% or 0.75)</td>
<td>Content Type (0.049)</td>
<td>Rankings within content-type with physician focus</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Content Access (0.126)</td>
<td>Rankings within content-access with physician focus</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Connectivity (0.266)</td>
<td>Rankings within connectivity with physician focus</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Commerce (0.559)</td>
<td>Rankings within commerce with physician focus</td>
</tr>
</tbody>
</table>
Table 3: Individual Firm Ranking Based on Level 4 Weights Provided by AHP

<table>
<thead>
<tr>
<th>Level 4: Individual firm level rankings at this level</th>
<th>Ranking: Highest to Lowest with scores in parenthesis and top 3 bold faced</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rankings within content-type with patient focus</td>
<td>Merck(0.321), Novartis (0.190), Warner(0.183), Pfizer(0.181), JNJ(0.068), Glaxo (0.036), Eli Lilly(0.02)</td>
</tr>
<tr>
<td>Rankings within content-access with patient focus</td>
<td>Novartis (0.453), Merck(0.237), JNJ(0.095), Glaxo (0.088), Warner(0.067), Pfizer(0.030), Eli Lilly(0.029)</td>
</tr>
<tr>
<td>Rankings within connectivity with patient focus</td>
<td>Novartis (0.297), Warner(0.243), Pfizer(0.149), JNJ(0.147), Merck(0.097), Glaxo (0.048), Eli Lilly(0.018)</td>
</tr>
<tr>
<td>Rankings within commerce with patient focus</td>
<td>Merck(0.419), Warner(0.220), Novartis (0.163), Pfizer(0.078), JNJ(0.067), Glaxo (0.027), Eli Lilly(0.027)</td>
</tr>
<tr>
<td>Rankings within content-type with physician focus</td>
<td>Merck(0.399), Warner(0.186), Novartis (0.174), Pfizer(0.096), JNJ(0.048), Glaxo (0.048), Eli Lilly(0.048)</td>
</tr>
<tr>
<td>Rankings within content-access with physician focus</td>
<td>Novartis (0.467), Eli Lilly(0.225), Merck(0.135), Warner(0.075), Pfizer(0.033), JNJ(0.033), Glaxo (0.033)</td>
</tr>
<tr>
<td>Rankings within connectivity with physician focus</td>
<td>Eli Lilly(0.342), Merck(0.342), Novartis (0.182), Pfizer(0.034), Warner(0.034), JNJ(0.034), Glaxo (0.034)</td>
</tr>
<tr>
<td>Rankings within commerce with physician focus</td>
<td>Merck(0.494), Eli Lilly(0.276), Glaxo (0.046), JNJ(0.046), Novartis (0.046), Pfizer(0.046), Warner(0.046)</td>
</tr>
<tr>
<td>Using 3 Levels Jointly</td>
<td>Combined Ranking: Website Classification and customer focus</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>-------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Rankings within Website classification with patient focus</strong></td>
<td>1. Novartis (0.312)</td>
</tr>
<tr>
<td></td>
<td>2. Warner (0.191)</td>
</tr>
<tr>
<td></td>
<td>3. Merck (0.179)</td>
</tr>
<tr>
<td></td>
<td>4. Pfizer (0.121)</td>
</tr>
<tr>
<td></td>
<td>5. Johnson and Johnson (0.119)</td>
</tr>
<tr>
<td></td>
<td>6. Glaxo (0.05)</td>
</tr>
<tr>
<td></td>
<td>7. Eli Lilly (0.021)</td>
</tr>
<tr>
<td><strong>Rankings within Website classification with physician focus</strong></td>
<td>1. Merck (0.404)</td>
</tr>
<tr>
<td></td>
<td>2. Eli Lilly (0.276)</td>
</tr>
<tr>
<td></td>
<td>3. Novartis (0.141)</td>
</tr>
<tr>
<td></td>
<td>4. Warner (0.053)</td>
</tr>
<tr>
<td></td>
<td>5. Pfizer (0.044)</td>
</tr>
<tr>
<td></td>
<td>6. Glaxo (0.041)</td>
</tr>
<tr>
<td></td>
<td>7. Johnson and Johnson (0.041)</td>
</tr>
<tr>
<td>Using all 4 Levels Jointly</td>
<td>Combined Ranking:</td>
</tr>
<tr>
<td>---------------------------</td>
<td>--------------------</td>
</tr>
<tr>
<td><strong>Rankings of overall Web activities</strong></td>
<td>1. Merck (0.348)</td>
</tr>
<tr>
<td></td>
<td>2. Eli Lilly (0.212)</td>
</tr>
<tr>
<td></td>
<td>3. Novartis (0.184)</td>
</tr>
<tr>
<td></td>
<td>4. Warner (0.087)</td>
</tr>
<tr>
<td></td>
<td>5. Pfizer (0.063)</td>
</tr>
<tr>
<td></td>
<td>6. Johnson and Johnson (0.060)</td>
</tr>
<tr>
<td></td>
<td>7. Glaxo (0.044)</td>
</tr>
</tbody>
</table>