

ISTANBUL TECHNICAL UNIVERSITY ★ INSTITUTE OF SCIENCE AND TECHNOLOGY

**ONLINE MARKETING ACTIVITIES OF
PHARMACEUTICAL FIRMS AND THEIR EFFECTS
ON PHYSICIANS' PRESCRIPTION BEHAVIOUR**

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**İLAÇ FİRMALARININ İNTERNET ÜZERİNDEKİ
PAZARLAMA FAALİYETLERİNİN, HEKİMLERİN
REÇETELEME DAVRANIŞLARINA ETKİSİ**

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FOREWORD

The Internet has provided pharmaceutical companies with an unprecedented opportunity to interact with physicians. Pharmaceutical companies are seeking to reach physicians at a time when they are searching for medical information. But whether these efforts work or not, is still in question. Based on such a sense, the purpose of this study is to firstly understand the expectations of physicians from the online sources of the pharmaceutical companies, and further clarify the effects of online marketing efforts of pharmaceutical companies, on the prescription behaviours of physicians.

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ABBREVIATIONS

IMC	: Integrated Marketing Communications
OTC	: Over the Counter
DTCA	: Direct to Consumer Advertising
IEIS	: The Turkish Pharmaceutical Manufacturers Association
CME	: Continuing Medical Education
ITU	: International Telecommunications Union
IMS	: International Medical Statistics
VAT	: Value Added Tax

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SUMMARY

This study aims to analyze what kind of information physicians need in online media and what kind of value supplying this need will bring to pharmaceuticals.

Previous studies have formed a basis for the needs of this research. The internet is undoubtedly one of the biggest social revolutions of our times and has a great potential to contribute to improving worldwide health outcomes by increasing health literacy and access to information. We know that healthcare information is the number one reason for internet use, and physicians are heavy users of internet, compared to other professions. Recently, pharmaceutical companies have started to utilize online marketing channels. But understanding what kind of information physicians need and what consequences supplying this need will bring to pharmaceutical companies is still in question. Understanding these will better help pharmaceutical companies to design their efforts in online media. Therefore, marketing budgets can be allocated more productively to maximize returns.

To test these questions, this study reveals two “pathways” that describe why pharmaceutical companies should incorporate the Internet into their practice.

Our model states that the website quality of a pharmaceutical company has positive effect on the prescription behaviours of the physicians that visit this company's website. This effect comes both directly from the web site and also through increasing the company's image.

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ÖZET

Bu çalışmanın amacı, doktorların internet üzerinde ne gibi bilgilere değer verdiklerini daha iyi anlamak ve bu bilgileri sağlamanın ilaç firmalarına ne gibi getirileri olacağı ile ilgili bir model sunmaktır.

Geçmiş literatür çalışmaları, bu çalışma için bir temel oluşturmuştur. İnternet, günümüzün tartışmasız en önemli devrimi halini almıştır ve sağlık konusunda bilgiye ulaşım hızını arttırarak sağlık alanında da devrim yaratmak üzeredir. Bildiğimiz kadarıyla internet üzerinde sağlık, en çok araştırma yapılan konulardan biridir ve doktorlar diğer mesleklerle karşılaştırıldığında interneti oldukça yoğun kullanmaktadırlar. . Son zamanlarda ilaç firmaları, doktorlarla iletişim kurmak için internet kanalından faydalanmaya başlamıştır. Fakat doktorların bilgi ihtiyaçları ve bu ihtiyaçları karşılamının getirisinin ne olacağı konularında tartışma sürmektedir. Bu ihtiyaçları daha iyi anlamak, ilaç firmalarının bütçelerini daha faydalı bir şekilde dağıtıp sağlanan faydaları ölçebilmelerine olanak verecektir.

Bu sorunlara çözüm aramak amacıyla çalışmamız, ilaç firmalarının interneti neden daha yoğun kullanmaları gerektiğini iki yoldan açıklamaktadır.

Bu çalışmada sunulan modele göre bir ilaç firmasının web sitesi, o web sitesini ziyaret eden doktorların reçeteleme davranışları üzerinde pozitif etki yaratmaktadır. Bu etki, hem doğrudan web sitesinin etkisinden, hem de firma imajını arttırarak imaj değişkeni üzerinden gelmektedir.

1. INTRODUCTION

Pharmaceuticals is a highly globalized industry, dominated by multinational companies that engage in significant business activity in many countries and whose products are distributed and marketed worldwide. The industry has undergone dramatic structural changes over the past few decades, with the rise of the biotechnology sector, substantial growth in demand driven by demographics and substitution away from other therapeutic modalities such as surgery, and increased competition from globally active generic manufacturers. (Cockburn, 2007)

More than ever before, the pharmaceutical industry today is faced with complex and critical challenges in the market place. The competition from generic manufacturers has become fierce, and patent protections are still an issue . Finally and most challenging, marketers are being held accountable for their budget allocations as measured by the number of new prescriptions. An increase in measurement emphasis and accountability results in the pharmaceutical industry questioning it's traditional marketing approach. This shift is causing marketers to shift away from popular detailing practices to more innovative approaches. Rising R&D expenditures in the face of health care cost containment pressures and apparently slowing research productivity give pharmaceutical companies a powerful incentive to seek out cost savings and new models for innovation. In an effort to find new avenues to efficiently reach their target segments and gain insight into their preferences, marketing teams have begun to adopt personalized new technologies.

The explosive development of the internet in the last ten years has created new commercial opportunities. Despite the strict regulations enforced by national states, the online presence of medicines came onto the web by an increasing number of pharmaceutical web sites. (Gurau, 2005)

However, especially in emerging countries, using new technologies like the Internet for marketing purposes is still a challenge for the pharmaceutical industry. Firms

usually keep their circumspection towards online spending because they do not know, how online activities impact physicians and their prescribing behavior.

This work aims to contribute to the literature by analyzing physicians' point of view towards online activities of pharmaceutical firms. Understanding what kind of information physicians need and what kind of presentation they value will better help pharmaceutical companies to design their efforts in online media. Therefore, marketing budgets can be allocated more productively to maximize returns.

2. LITERATURE REVIEW

2.1 Marketing Communications

For the past decade, academics and practitioners alike have looked to research textbooks, shared knowledge through conferences and seminars and field practice to define and apply marketing communication – that is, what it is, how it works in practice, and what it might most contribute to marketing communication and brand development in the future. Descriptive studies have investigated practitioner perceptions of it, organisational structures and challenges in implementation of marketing communication tools. Process models have been developed and theory drawn from these observations in an attempt to better understand the foundations of marketing communications and to identify future research directions.

Before looking at marketing communications, we should consider briefly marketing. The marketing mix is essentially a conceptual framework that helps to structure the approach to the marketing challenge. The marketing mix approach is one model of crafting and implementing marketing strategies. It recognizes that marketers have essentially four variables to use when crafting a marketing strategy and writing a marketing plan. They are price, promotion, product and distribution (also called placement). They are sometimes referred to as the four p's.

A marketing mix is a combining of these four variables in a way that will meet or exceed organizational objectives. A separate marketing mix is usually crafted for each product offering.

Some commentators have increased the number of p's in the mix to 5, 6 or even 8. "People" is sometimes added, recognizing the importance of the human element in all aspects of marketing. Others include "Partners" as a mix variable because of the growing importance of collaborative channel relationships. Others feel that it is not an appropriate model for some types of marketing, particularly industrial product marketing and services marketing. The original 4 P's of marketing that were the elements of a marketing mix are:

Product: Product decisions defines the real physical product characteristics which might include product brand name, quality, packaging, functions, after sales services, etc.

Pricing : Pricing decisions includes list, retail, wholesale, seasonal pricing, volume discounts, early-bird discounts, bundled pricing, flexible pricing, consignment options etc.

Placement : Placement decisions essentially means distribution channels which utilize to bring products to the customers. Extent of coverage in the market could be defined by inclusive or exclusive or selective distribution. Distribution and warehousing centers, inventory management as well as logistics. Internal extension of sales distribution is a common consideration.

Promotion : Promotions decisions is the final phase of the marketing mix which, to certain extent could make or break a product. This is the phase where the product is communicated to target segments with communication tools available. The promotional mix includes Advertising & Promotions, personal selling, sales promotions, public relations and publicity as well as sponsorships. The Promotion element can be defined as ‘marketing communication’, which includes selling, advertising, sales promotion, direct marketing, publicity, sponsorship, exhibitions, packaging, point of sale, word of mouth, e-marketing and corporate identity. (Hughes, 2006)

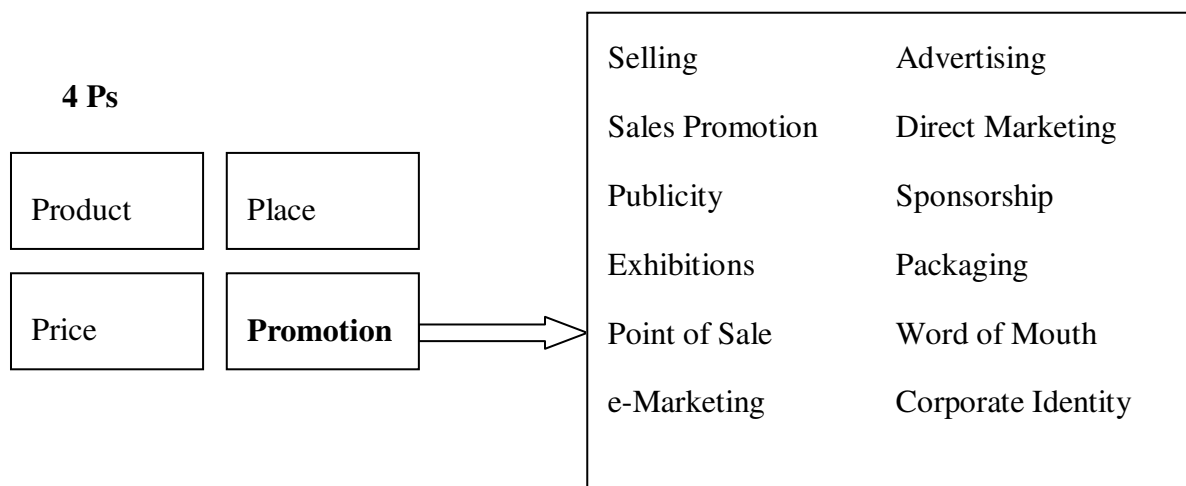


Figure 2.1 : Promotion (Marketing Communication) Elements

Traditionally, marketing communication practitioners focus on the creation and execution of printed marketing collateral and the like; however, academic and

professional research developed the practice to use strategic elements of branding and marketing in order to ensure consistency of message delivery throughout an organization. Many trends in business can be attributed to marketing communication; for example: the transition from customer service to customer relations, and the transition from human resources to human solutions. In branding, opportunities to contact stakeholders are called brand touchpoints (or points of contact.) Marketing communication is concerned with the general behavior of an organization and the perceptions of the organization that are promoted to stakeholders through these touchpoints.

Marketing communications is focused on product/produce/service as opposed to corporate communications where the focus of communications work is the company/enterprise itself. Marketing communications is primarily concerned with demand generation, product/produce/service positioning while corporate communications deal with issue management, mergers and acquisitions, litigation etc. (Kerr and others, 2008)

2.1.1 Integrated Marketing Communications

IMC (Integrated Marketing Communications) essentially is a management approach that aligns and optimizes the communications impact of various disciplines. American Association (1989) defines it as a concept of marketing communications planning that recognises the value in a programme that integrates a variety of strategic disciplines – e.g. general advertising, direct response, sales promotion and public relations – and combines these disciplines to provide clarity, consistency and maximum communication impact.

Schultz (1991) defines it as the process of managing all sources of information about a product/service to which a customer or prospect is exposed, which behaviourally moves the customer towards a sale and maintains customer loyalty.

According to Kotler (1999), IMC is the concept under which a company carefully integrates and coordinates its many communications channels to deliver a clear, consistent and compelling message about the organisation and its products.

Duncan (2004), says that it's a cross-functional process for creating and nourishing profitable relationships with customers and other stakeholders by strategically controlling or influencing all messages sent to these groups and encouraging data-driven purposeful dialogue with them.

The concept of integration has existed in advertising and marketing literature for many decades, but the practice appears to have been minimally implemented. As early as 1930, the need for integration in marketing was recognized by Converse (Spotts and others,1998), who urged greater cooperation between the sales team and advertising to optimise results (a subject that is still being debated today). Levitt, in 1960 (Spotts and others,1998), also proposed that the entire business process should be an integrated effort. Many others have 'preached' integration, but few followers have developed. This is clearly evident from the continuation of the functional silos found in almost all advertising, communication, promotion and marketing practices, educational courses and academic journals. The concept of integration has also been recommended for promotion.

A series of articles written between 1991 and 1996 have outlined the specific dimensions of the IMC concept, presenting it as a logical answer to the problems experienced by many business and non-profit organisations.

Following this phase in which the concept has received the proper legitimacy, a series of studies (Kitchen and Schultz, 1999) have initiated an investigation into the practical application of the concept by the practitioners – especially US and UK-based advertising agencies. The conclusions of these studies were complex: on one hand, the advertising executives recognised the impact of IMC on increasing the effectiveness of creative ideas, providing greater communication consistency, and improving the client return on investment; on the other hand, they outlined the problems related with measuring the IMC outcomes in terms of time and cost efficiencies.

According to Pickton and Broderick (2001), marketing communications tools that were traditionally separated and specialised in "above the line" and "below-the-line" activities, should be now integrated under the IMC concept and synergy is the principal benefit of bringing together the various facets of marketing communications in a mutually supportive way.

Other definitions emphasise that the integration of marketing communication should not be understood as a simple uniformity of the message transmitted across different channels (Kitchen and others, 2004), but rather as the complex coordination and management of the information transmitted through complementary channels in order to effectively present a coherent image of the organisation to the targeted audiences. A good example is the definition proposed by Keegan (1992):

Integrated marketing communications is the strategic co-ordination of all messages and media used by an organisation to collectively influence its perceived brand value. This definition focuses on the concept of “strategic coordination”, indicating the evolution from tactical coordination towards a more strategic approach, in order to realise communication synergies. In addition, the definition considers “all messages” highlighting that both internal and external activities contribute to marketing communications efforts, and stresses the focus on brand value that requires a change of marketing and communication perspective. At the heart of this definition is the assumption that the credibility and value of both the company and its brands will increase, when messages transmitted to various audiences become consistent across time and targets. (Kerr and others, 2008)

Another definition proposed by Duncan (2004) demonstrates the current conceptual perception of IMC: A cross-functional process for creating and nourishing profitable relationships with customers and other stakeholders by strategically controlling or influencing all messages sent to these groups and encouraging data-driven, purposeful dialogue with them.

An important contribution of this definition is the emphasis on “profitable relationships”.

Moreover, Duncan acknowledges that integrated marketing communications involves a cross-functional process. This indicates that all organizational departments that interact with customers and strategic stakeholders must share a common understanding and work collectively to develop long-term brand relationships.

Furthermore, the notion of stakeholders implies the shift in the IMC concept from customer target audiences to the inclusion of key stakeholder groups such as employees, investors, suppliers, distributors, media and the social community.

Conceptually, IMC provides an opportunity for organizations to enhance the relationship of their brands with customers and other stakeholders. The strategic coordination of all marketing and communication tools can lead to a consistent brand message directed towards the targeted audiences, using effective media planning. This strategy fosters an ongoing consumer-brand relationship which leads to profitable outcomes.

2.1.2 Online Marketing Communications

The rapid development of the internet in the last ten years has changed the classical communication procedures, because of three specific and co-existent characteristics that differentiate it from any other communication channel. (Gurau,2005)

Interactivity. The internet offers multiple possibilities of interactive communication, acting not only as an interface, but also as a communication agent (allowing a direct interaction between individuals and software applications).

Transparency. The information published online can be accessed and viewed by any internet user, unless this information is specifically protected.

Memory. The web is a channel not only for transmitting information, but also for storing information – in other words, the information published on the web remains in the memory of the network until it is erased.

These options are transforming the profile and the behaviour of online audiences. Marketing communication practitioners should therefore adapt to the new realities of how audiences get and use information: The audience is connected to the organizations. The traditional communication channel was unidirectional – the institutions communicated and the audiences consumed the information. Even when communication was considered a two-way process, the institutions had the resources to send information to audiences through a very wide pipeline, while the audiences had only a minuscule pipeline for communicating back to the institutions.

The audience is connected to one another. Considering the nature of the network, if the audience is one click away from the institution, it is also one click away from other members of the audience. Today, a company's activity can be discussed and debated over the internet, without the knowledge of that organization. In the new

environment everybody is a communicator, and the institution is just part of the network. The audience has access to other information. In the past, because of the slowness and difficulty to access specific information, the communicator was able to make a statement with the reasonable certainty that it would be impossible for the average audience member to challenge it. Today, it is easy to access multiple sources of information over the internet. Any statement made can be dissected, analyzed, discussed and challenged within hours by interested individuals. Audiences pull information. The networked world has increased exponentially the number of available channels of communication. Today, we get messages from multiple media channels: email, voice mail, faxes, pagers, cell phones, interoffice memos, overnight courier packages, television (with hundreds of channels), radio, internet radio, etc. As a result, the media that used to provide an efficient channel of communication for practitioners have become now only noise that most of the audiences have learned to filter out. On the other hand, the networked environment provided the audiences with a new model, one in which they no longer accept every message a communicator wants to push to them, but they rather pull the information that suits their interests and needs. In the networked environment, information has to be available where audiences can find it, and must be customized or customizable. Therefore, in comparison with the traditional customer, the internet user has more control over the communication process, and can adopt a more proactive attitude, expressed by the capacity to: easily search, select and access information (using search and meta-search engines, intelligent agents, etc.); contact online organisations or other individuals (using email, chat or discussion forms); and express their opinions/views in a visible and lasting manner (creating and storing online content).

Until now the relationship between brands and consumers has been one way. The rules of marketing had to change, and the web has proved a catalyst in bringing the changes forward and amplifying their scale. The removal of frictions in the spread of information has created a radically different landscape for marketers to work within and this is a key element in understanding how the first generation of internet marketing works. The sudden emergence of the interactive online marketing techniques demand additional approaches, and while most marketers are still wrestling with the first generation, savvy brands are exploring the landscape that social media and social networks create for marketers. These techniques are allowing

much deeper drivers in social change to be unleashed, with a profound impact on planning customer connections. (Klue, 2008)

Schibrowsky et al. identified three research areas that are believed to grow in the near future: (1) the issue of consumer trust in the Internet; (2) the issue of how consumers will use the Internet for marketing-related activities in the future; and (3) the issue of where the Internet is headed as a marketing tool.

Kaynak, Tatoglu, and Kula (2005) studied internet businesses in Turkey. A survey questionnaire was used to solicit information from managers in randomly selected businesses that employed between 10 and 100 persons. Respondents were asked to indicate their frequency of use of various e-commerce applications on the Internet. The survey also asked respondents to react to a number of commonly understood benefits and limitations of e-commerce. The survey was sent to 1,200 companies, with a response rate of just under 38 percent. Kaynak, Tatoglu, and Kula found that, in terms of frequency of usage, the highest ranked applications were those associated with external communication (i.e., E-mail) and accessing information for market and product research. The second most frequently used applications centred on the companies' willingness to do business over the Internet (e.g., exchanging information with clients and suppliers; receiving orders from clients; placing orders with suppliers). The lowest-ranked group of applications had to do with various specific functions, such as using the Internet as a medium of payment, placing job recruitment information, and videoconferencing. With regard to perceived benefits, the respondents indicated general agreement that the benefits listed in the survey were accurate. Among the benefits listed, the following ranked highest: 24-hour accessibility; low-cost communication; easy access to international markets; and easy access to potential customers. At the other end of the scale, the lowest ranked benefits were: decrease in sales staff's travel time; increase in sales; monitoring the performance of competitors; and online sales and operation. In analyzing the data on perceived limitations of internet-based e-commerce, the researchers found the following were agreed to most often as the major limitations: limited number of Internet users; reduced efficiency due to unnecessary Internet use; lack of legal regulations; and suppliers and/or customers being offline. On the other hand, the respondents showed the lowest levels of agreement with the following statements of

limitations: technically complex; no efficiency in operations, no reduction in operating costs; and uncertainty regarding message delivery.

Steenkamp and Geyskens (2006) examined how country characteristics affect the perceived value of Web sites among consumers from 23 countries around the world. The researchers tested a number of hypotheses to determine whether country characteristics moderate the effects of individual-level antecedents of perceived value of Web sites of consumer packaged goods producers. Their findings provided validation of their conceptual model as most of their hypotheses were supported. For example, they found that perceived privacy/security is most important in countries characterized by weak rule of law and that perceived privacy/security, pleasure, and customization are more important in individualistic countries than in collectivist societies. Cultural congruity was more important in countries that ranked high on national identity while there was some evidence that utilitarian experience is more important to the members of collectivist nations. Overall, the authors suggest that the designers of Web sites should develop customized and localized Web sites that take into account the moderating effect of country characteristics on individuals' perceptions of Web site value. (Thomas, 2008).

Rosenbloom (2002) elucidated ten key beliefs that surrounded and governed the realm of e-commerce. These ten beliefs pertained to disintermediation (no middlemen), lower costs, real-time product flow, non-significance of profits, first mover advantage, market capitalisation worship, sole importance of convenience and efficiency, pure play, valuation by publicity, and the internet as a whole new culture. (Natarajan, 2006)

Taking advantage of the various online resources requires strategic thinking that recognizes that all these aspects of the networked world coexist. They must be coordinated to achieve specific, measurable objectives consistent with the goals of any marketing communication effort. Internet technologies allow online-active organisations to implement these main communication synergies.

(1) The integration and coordination of communication modes: the organisations can combine one-to-one (email), one-to-many (list-based email messages, web pages), and many-to-many (discussions and forums) communication in the online

environment. This synergy increases Meaning Frequency Percentage Combination of communication modes. (one-to-one, one-to-many, many-to-many); Integration of information types (text, sound, image); Consistency of messages transmitted through the online communication-mix (coherent meaning); Integration of marketing and PR communication functions in the messages provided online; The coordination of the process: message conception –transmission – feedback reception and analysis, in a closed loop; Coordination of internal, external and internal-external flows of information.

(2) The integration and coordination of various types of information: the recent advances in information and communication technologies (broadband) allow organisations to transmit or receive a complex combination of information in the form of texts, sounds and images (static and/or dynamic). This synergy has a direct effect on the complexity and clarity of the communication, enhancing the capacity of the organisation to tailor its messages to the specific needs and requirements of various audiences. Unfortunately, complex messages can often create compatibility problems.

(3) The integration and coordination of complex information flows between the organisational intranet and the internet. The organisation is now able to implement advanced software applications that connect its marketing and management information systems with the online environment, and to automatically coordinate the communication with various audiences. This capability has a powerful impact on multiple aspects of the communication process.

(4) the capacity to automatically capture and register customer data (demographic or behavioural) and customer feed-back.

(5) the capacity to automatically analyse the information collected about audiences, to a level of segmentation and detail that allows the implementation of one-to-one marketing communication.

(6) the capacity to use the existing databases in order to automatically launch and coordinate highly targeted communication campaigns (automatic email responses, automatic email campaigns, personalised event marketing, promotional news and newsletters).

2.2 Pharmaceutical Marketing and Communication

2.2.1 Pharmaceutical Marketing

The pharmaceutical industry is a prime example of an industry that combines both “push” and “pull” strategies in their marketing efforts.

The “push” strategy, which relies primarily on personal selling and sales promotion as a means to “push” a product through the marketing channel, is exemplified by the efforts of salespeople who market drugs directly to physicians (Benitez, 2003). The other examples include promotional business gifts, events, trade shows, internet marketing and public (physician) relations.

Pull strategies, which rely on advertising and sales promotion to the consumers and physicians to “pull” the product through the marketing channels, are illustrated by the annual use of approximately 34,000 advertisements in USA (Adams, 2002) that promote both over the counter drugs as well as prescription medications. This growth is not expected to decline; Lipman (2000) indicates that these huge amounts of advertising effort will have the effect of sending consumers to their physicians asking for information about a particular brand of a product or directly asking the physician that the product be prescribed to them.

It seems clear that the combination of these push and pull strategies are aimed at increasing the awareness of various types of products by both the consumer (patient) and the physician, and ultimately increasing the sale of those products.

Depending on the category of drug, the nature of the marketing mission is different. There are essentially two categories of drugs: self-medication or over the counter (OTC) drugs, and prescription drugs. OTC drugs (paracetamol and anti-histamines) are promoted directly to consumers as well as physicians and other healthcare professionals. What is categorized as OTC varies from country to country and is dependent on the local legislative framework – usually a national medicines authority. (Buckley, 2004)

Corstjens (1991) identifies four main buying parties for prescription drugs:

1. Prescriber – prescribing rights vary internationally and this category may include doctors, dentists, pharmacists, nurses and optometrists
2. Influencer – hospitals, nurses, professors, reimbursement agencies
3. Consumer – patient
4. Financier – partly patient, partly government or third party (varies by country), managed health care organization (hospitals, Health Maintenance Organisations etc.)

Undoubtedly, the greatest power among these is the prescriber. The majority of Big Pharma's marketing budget is targeted at doctors and others with prescribing power, who are effectively the gatekeepers to drug sales. Especially in a country like Turkey, where Direct to Consumer Advertising (DTCA) is banned, the role of the physicians in the pharmaceutical market is significantly determinant.

Promotion efforts directed at physicians are important for the continued health of the pharmaceutical industry. The World Health Organization defines pharmaceutical promotion as: "all information and persuasive activities by manufacturers and distributors the effect of which is to induce the prescription, supply, purchase, and/or use of medicinal drugs". The companies seek to inform physicians about a drug, persuade physicians to write prescriptions for their drug, and remind them of their drug throughout its product life cycle in order to maintain the drug's brand equity. Socially responsible pharmaceutical companies will be objective and complete in their information dissemination, helping physicians to rationally prescribe medications. (Spiller And Wymer, 2001)

Pharmaceutical companies incorporate advertising, personal selling, sample distributions, support via internet, and public relations into their promotion mix.

Although some physicians working for managed care organizations are forbidden to make appointments for detailers, previous research shows that most physicians see pharmaceutical representatives on a regular basis.

2.2.2 Pharmaceutical Online Marketing

Technology is giving healthcare and pharmaceutical marketers more means than ever to engage their patient and physician customers and make them more accessible. While it is imperative to establish meaningful and informative dialogues with customers, it is also important to manage them for optimum outcomes.

Blanckett and Robins(2001) have stated that the future is about to necessitate a revolution in the pharmaceutical sector for communication, more widespread channels of distribution (including the Internet) and regulatory changes.

The increasing reliance on the internet by the healthcare community at large has been shaping the practice of health communication by opening the way to the use of interactive health communications tools (Web sites, Internet-based games, online press rooms, disease symptoms simulations, opinion polls, seminars, etc.), which are often designed as part of larger health communication interventions. Professional and personal blogs, podcasts, chat rooms and forums have also become a prominent source of health information among different kinds of audiences. E-health emerged as a general buzzword after 1999 and is defined as “a field in the intersection of medical informatics, public health and business, referring to health services and information delivered or enhanced through the Internet and related technologies”. (Schiavo, 2007)

Ultimately, the internet is increasingly being perceived as an important communication channel and is functioning as some of the more established channels.

The advent of the World Wide Web and the Internet has made it possible for healthcare providers to publicize their offerings through this technological route. Healthcare organizations were slow to jump onto the Internet bandwagon but recently there has been a surge of interest. However, the fact remains that progress in this area has remained uneven in many organizations. As in other aspects of marketing, websites oriented towards healthcare marketing are frequently targeted for cutbacks when budgets are tight. (Thomas, 2006) Another drawback is that, healthcare is recognized as a regulated industry with many restrictions on account of

product-labeling and consumer privacy issues. Companies in some cases want to stay in comfort zones by avoiding innovations such as Internet marketing.

(Venkatesh, 2001)

Pharmaceutical companies progress through different stages. The first stage involves a brochure site indicating who they are and what they do. Most pharmaceutical companies have passed through this stage, but beyond that they are all over the board in terms of information provision, interactivity, and relationship building. The public interest in online healthcare information continues to grow. It remains to be seen if drug companies and provider organizations, will be the preferred source of health-related information or whether these functions will be carried out by the Web MDs of the Internet world. (Venkatesh, 2001)

Schiavo (2006) has identified the key issues in online health communication

- A true understanding of situations and needs as well as audience characteristics and health literacy levels.
- The quality and scientific resonance of the information being presented.
- The development of well-defined goals and objectives for the online health communication intervention.
- A behaviour-oriented mindset, which should prompt consideration for the kind of behaviour online communications seek to influence.
- The information's graphic appeal — Showing instead of telling is a good practice in most forms of communications and, in the case of internet-based communications, it is both an obvious opportunity and a strategic imperative. Somewhat, this may have a different weight for internet uses that seek to expand the circulation of print materials or create online access to specific information (eg online libraries, e-journals, e-books, etc) but it is a prominent factor for all other internet applications.
- The cultural competence of online information and tools, which should be designed to reach across cultural boundaries and intended audiences' ideas of health and illness.

Data from a study by Flanagin and Metzger (2001) showed that conversation features of the Internet align with mediated interpersonal technology (the telephone and electronic mail). Similarly, internet use for giving and retrieving information is widespread. Information-related features are often used in ways that are similar to more traditional mass media channels, including print, broadcast and books .

Still, the influence of the internet and other related technologies varies from population to population and group to group. It is related to media access as well as specific media uses and preferences among members of intended audiences.

The accuracy and quality of the information retrieved or exchanged on the internet is a key issue that may affect perception of the overall field of online health communications as well as its use among some audiences.

Schiavo (2006) included examples of some of the key factors that influence online communications quality in the healthcare field.

- Evidence-based, referenced and regularly updated information
- Peer review or professional authorship process
- Transparency about information source and/or health organisation's history, mission, activities and goals
- Information endorsement by key opinion leaders (KOLs) and other health organisations
- Source accreditation by reputable accrediting institutions
- Grant and conflict of interest disclosure
- Clarity on intended use of personal data
- Reputable and/or community-based sources and spokespeople
- Culturally competent format that translates into visual and graphic appeal, and adequate use of language
- Easy navigation
- Audience-driven resources and tools, including audience feedback mechanisms
- Inclusion of design features and tools that help create bridges among different key audiences
- Integration with services and other health communication interventions.

2.2.3 The Quality of Pharmaceutical Websites

The principal dilemma of the internet is that, while its anarchic nature is desirable for fostering open debate without censorship, this raises questions about the quality of information available, which could inhibit its usefulness.

Quality is defined as “the totality of characteristics of an entity that bear on its ability to satisfy stated and implied needs.” (Bell and Tang, 1998) For quality to be evaluated, these needs have to be defined and translated into a set of quantitatively or qualitatively stated requirements for the characteristics of an entity that reflect the stated and implied needs.

Construct measurement in general and in the context of web technologies and applications in particular is a challenging task, hence, deserves more attention from researchers interested in this phenomenon. However, web site quality measurement is neither simple nor straightforward. Web quality is a complex concept; therefore, its measurement is expected to be multi-dimensional in nature. Current research on web quality seems to pay less attention to construct identification and measurement efforts. Only limited academic research exists, but it is fragmented and usually only discusses the meaning of some aspects of web quality. At the practitioner level, several commercial ranking systems are available to rate web sites according to certain quality attributes, e.g. Web Awards (www.webaward.org) and The Web Awards (www.thewebawards.com). These ratings, however, lack clarity in terms of criteria used and the ranking methodology. Also these are not targeted towards a specific area, like healthcare.

Web quality is a vastly undefined concept. For the most part, existing scientific research discusses the meaning of some aspects of web quality in a descriptive manner without delineating its major dimensions or providing tested scales to measure it. For example, Liu and Arnett (2000) named such quality factors as accuracy, completeness, relevancy, security, reliability, customization, interactivity, ease of use, speed, search functionality, and organization. Huizingh (2000) focused on two aspects of web quality: content and design. Wan (2000) divided web quality attributes into four categories: information, friendliness, responsiveness, and reliability. The authors highlighted the importance of factors such as download

speed, web interface, search functionality, measurement of web success, security, and Internet standards.

Kim and Others (1999) defined perceived web quality as users' evaluation of a web site's features meeting users' needs and reflecting overall excellence of the web site and identified three dimensions of web quality: technical adequacy, web content, and web appearance. The sample items were initially assessed using a Delphi method. Two information systems scholars were asked to evaluate the items and make changes to eliminate repetitive items, technical/non-user oriented items, and sub-attributes of higher level attributes. After three evaluation rounds, 55 web quality attributes remained in the list. In first stage of data collection, the 55-item instrument was administered to student web users enrolled in three different sections of an introductory information systems class at a business school. The reliability levels for the reduced web quality dimensions came as 0.89, 0.86 and 0.81 for technical adequacy, web content, and web appearance, respectively. Their final categorization is below:

- Technical adequacy : Security; ease of navigation; broadcast services; limited use of special plug-ins; search facilities; anonymity; availability; valid links; reliability; browser sniffing; personalization or customization; speedy page loading; interactivity; ease of access; multi-language support; protected content; bookmark facility
- Web content : Usefulness of content; completeness of content; clarity of content; uniqueness of content; broadness of content; originality of content; currency of content; conciseness of content; accuracy of content; finding contact info.; finding people without delay; finding site maintainer; finding links to relevant sites; finding firm's general info.; finding products/services details; finding customers' policies; finding customer support; finding FAQ list; finding free services; using limited registration forms; finding online help; diversity of content; finding free info
- Web appearance : Attractiveness; distinctive hot buttons; changing look; organization; proper use of fonts; proper use of colors; proper use of graphics; graphics-text balance; proper use of multimedia; style consistency; proper choice of page length; good labeling; text-only option; proper use of language/style; color

Eysenbach and others (2002) have recognised the specifications of online health information.

- Complete lack of quality control at stage of production, leading more easily to lack of reliability.
- A “context deficit” leading to situation where information does not necessarily have to be false to harm.
- Less clear “markers” than in traditional publishing to allow patients to easily recognise a document as intended for professionals rather than for patients. Patients reading information intended for health professionals may misinterpret information, leading to false expectations about treatment options, etc
- It is possible to read a web page without having seen context pages or the “cover” page containing disclaimers, warnings, etc
- Anonymity (of authors) may cause additional problems. Authors of web pages, news articles, emails, etc, sometimes remain unidentified
- Health information that is valid in a specific healthcare context may be wrong in a different one: “A free market of information will conflict with a controlled market in health care”

Kim and Others, (1999) has done a study which reviews criteria currently proposed or employed specifically to evaluate health related web sites. Between September 1997 and May 1998 they conducted a search of the web and peer reviewed medical journals for criteria for evaluating health related information on the web using Medline and Lexis-Nexis databases, and web search engines including Yahoo!, Excite, Altavista, Webcrawler, HotBot, Infoseek, Magellan Internet Guide, and Lycos. Not surprisingly, “content” of the site, which includes concepts of information quality and accuracy, was the most commonly cited criterion group. Design and aesthetics of the site and ease of use were the second and sixth most frequently cited groups respectively, indicating that authors highly value good quality application design and user interfaces. Disclosure of authors, sponsors, or

developers had the third highest frequency, highlighting the need for users to be able to consider a site's content in the context of who created or financed the site. It was somewhat surprising that disclosure was not more commonly cited given recent reports about misleading health information and fraud on the internet. Most rating tools discriminated between content and the fourth most common criterion group, currency of information (includes frequency of update, freshness, maintenance of site), suggesting that currency of information is nearly as important as the information itself.

Criteria related to confidentiality and privacy of information were only cited by one author despite widespread interest in this issue. Some health related web sites are already collecting personal health information to “tailor” content, and as sites begin to integrate healthcare services and information, confidentiality and privacy safeguards will become increasingly important.

Risk and Dzenowagis (2001) have addressed the complexity of the issues surrounding quality of health information in the context of Internet. In their search, some of the key self-regulation initiatives of Internet health information quality have been described and analyzed. Their research clarifies and discusses the issues and requirements for the further development of Internet health information quality. They point out that there is an urgent requirement to examine the needs of the developing world and the info-poor in relation to quality of Internet health information, products, and services. This is a reflection on how poorly the current batch of quality initiatives have addressed those needs. This examination would include determining whether or how quality standards can help developing countries, especially where regulatory agencies are weak or nonexistent; or where there is excessive, uninformed, or onerous regulation. Another discussed issue is that, there is a need for coordination and harmonization of the efforts striving towards quality health information on the Internet. This extends to the key players in both the self-regulation and the mainstream and regulatory camps, and includes regional and international bodies, the health care products industry, foundations with an explicit interest in Internet health information, private and corporate interests, and citizen and country representation and participation.

In Turkey, the research-based pharmaceutical industry strongly supports and encourages the appropriate use of the Internet and related technologies to provide accurate and scientifically reliable information on health care and medicines, as well as providing information in a responsible manner, for the benefit of patients, healthcare professionals, and all who have an interest in human health and the proper use of medicines. Medicines and health issues are important areas for the communities. Patients as well as health professionals (physicians, pharmacists, nurses, etc.), wish to get unbiased, up-to-date, clear and concise information related to the health issues and medicinal products. The Turkish Pharmaceutical Manufacturers Association (IEIS) is a nonprofit and nongovernmental private organization established in 1964. Considering the particular characteristics of medicines, the pharmaceutical industry should adhere to special ethical criteria, when promoting their products. A Code has been prepared by the IEIS with the intention of establishing and maintaining high ethical standards in the promotion of medicines and other pharmaceutical products in Turkey. Conveyance of such information should conform to the general rules set by the Turkish Ministry of Health, be in good taste and comply with ethical criteria.

IEIS published the latest form of medicinal product promotion guidelines on January 1, 2003. Appendix A contains the section entitled as “Pharmaceutical Companies’ Internet Web Site Application Guidelines”.

Based upon these guidelines, Yeğenoğlu and others (2005) proposed a research to determine to what extent the pharmaceutical companies in Turkey comply with these rules; in the second phase they wanted to explore whether there were discrepancies between the websites of national and international pharmaceutical companies those exist in Turkey.

The company websites were evaluated in terms of IEIS guidelines. The list of all the national and international pharmaceutical companies in Turkey was obtained from the Community Pharmacists’ Desk. Each pharmaceutical company’s website was assessed in terms of compliance with the IEIS guidelines. Each site was evaluated in terms of availability of drug advertisement, mail address, e-mail address, telephone number, fax number, update information, indication of target group, links, references, information to the public, appropriate content for the

intended target group, disclaimer stating the given info is only for healthcare professionals, disclaimer stating the given information cannot replace a physician or a pharmacist, responsible person/ body for the website design.

A total of 51 pharmaceutical companies were eligible for evaluation, of these 34 (66.7%) were national and 17 (33.3%) were international. Of all the evaluated websites, 18 companies had advertisement on their home page. Of the total companies, the majority (89.2%) had mail address and telephone number; fax number (84.3%); information for the public (64.7%); links (66.7%); and appropriate content for the intended target group (only for health professionals) (62.7%). Most of the pharmaceutical companies did not provide an e-mail address (64.7%) on their website. The frequency of having update information and a separate pharmacist/physician information part was higher among international websites compared to the national ones. There were more national pharmaceutical company websites (75.8%) than the international pharmaceutical company websites (24.2%) not providing information for the public, whereas the number of websites providing information to the public was equal for both national and international pharmaceutical companies. The ratio of national pharmaceutical company websites (64.7%) supplying links was higher than the international ones (35.3%).

There were more national pharmaceutical company websites (69.4%) that failed to provide references than the international pharmaceutical company websites (30.4%).

It is a common approach that almost all health related websites on the Internet to put a disclaimer stating that the provided information cannot replace a healthcare professional. Of the 34 national pharmaceutical company websites, 62.5% provided that disclaimer while of the 17 international pharmaceutical companies 37.5% had that disclaimer on their websites. On their websites 72.4% of the national pharmaceutical companies indicated the responsible person/body for designing the website, whereas this ratio was 27.6% for international pharmaceutical company websites

As a result of the evaluation, majority of the pharmaceutical companies failed to comply with the guidelines set by IEIS when designing their website on the Internet.

The international pharmaceutical company websites were significantly better than the national ones in two aspects:

Updating their websites and providing separate pharmacist/physician information part as the guidelines suggested. When other criteria were considered both national and international pharmaceutical company websites had many missing items. Also important was the pharmaceutical companies' questionable approach by putting ads on their main pages, which is also contrary to the drug promotion regulations in the country. It should be the responsibility of the pharmaceutical companies to communicate evidence-based scientific data in a format that can be easily understood by most lay persons. However, most of the pharmaceutical company websites were insufficient in providing information to the public. In spite of such detailed guidelines, pharmaceutical companies failed to comply with them.

After the overview of the recent literature in this area, it should be noted that in this study, it's important that the quality of the website should be measured from the physicians' perspective. The existing literature on the pharmaceutical website quality is often viewed from ethical perspective or consumer perspective, which arises the need to establish a new measure which incorporates the pharmaceutical web site quality and physician perspective.

2.2.4 The Internet Use Among Physicians

Internet technology has enabled health professionals to obtain and share increased amounts of health care information and to track and monitor diseases. In addition, the Internet has allowed physicians throughout the world to collaborate, communicate, and interact. Increasingly, physicians use on-line databases to search for the latest information on clinical protocols in different medical specialties and patient management and to consult with specialists and seek continuing medical education. The Internet is of increased importance in the practice of medicine as a consequence of the efficiency of communications, the accessibility of on-line evidence-based medicine reviews, and the need to assist patients in selecting reliable Internet resources (Chew and others, 2004). The Web serves as a source of physician education and decision support. There are many opportunities on the web, like textbooks, journals, online courses, self-assessment examinations, alerting services,

email consultations to colleagues, access to clinical guidelines, and decision support programs. Physicians report increased use of the Web during office visits with patients and for continuing medical education purposes off hours. (Wald and others, 2007)

The core focus of this study is pharmaceutical marketing to health experts. From an international perspective, excluding the United States, e-marketing is clearly a physician-focused strategy. Due to regulatory restrictions, consumer advertising and online promotion are not viable options for pharmaceutical e-marketers.

As a result of these limitations on consumer marketing, the real opportunity for impact lies with physicians. The data surrounding physician technology use and interest in online pharmaceutical information reveal significant opportunities in the realm of physician e-marketing strategies.

Our understanding about the role of the Internet as a resource for physicians has improved in the past several years with reports of patterns for use and measures of impact on medical practice.

Understanding more about physician information-seeking needs, behaviors, and uses is critical to CME (Continuing Medical Education) providers to support a self-directed curriculum for each physician. A shift to increased use of electronic CME options points to new demands for users and providers. Specific information about how physicians create a question and search for resources is an area that requires providers to develop new skills.

According to a survey released by Manhattan Research, physicians are increasingly turning to high technology in conducting their everyday practices. The market research firm reported that nearly 40 percent of the physicians surveyed have used iPods or another portable digital music player. Towards the 'digitization' of health information, the data revealed continued growth of physicians using electronic medical records or electronic prescribing. According to the results, 142,000 physicians in USA reported they are actually using the Internet during patient consultations. Even on the cutting edge of technology, Manhattan Research found that 487,000 physicians use the "new media", streaming video, downloadable audio content and blogs. In their contacts with pharmaceutical companies, 75 percent of

physicians said they have used; or are interested in using online customer service with drug companies. (Manhattan Report, 2006)

Bennett and others, (2005) have carried out a survey about Internet use and physician information seeking, which was administered by facsimile transmission to a random sample of 3,347 physicians. The results showed that almost all physicians have access to the Internet, and most believe it is important for patient care. The most frequent use is in accessing the latest research on specific topics, new information in a disease area, and information related to a specific patient problem. Critical to seeking clinical information is the credibility of the source, followed by relevance, unlimited access, speed, and ease of use. Electronic media are viewed as increasingly important sources for clinical information, with decreased use of journals and local continuing medical education (CME). Barriers to finding needed information include too much information, lack of specific information, and navigation or searching difficulties.

The internet usage rate is as high as USA, in Northern Europe. (Nylenna and Aasland, 2001) have designed a study, based on a postal survey of a random sample of 1646 active physicians, totaling more than 10% of all Norwegian physicians. A questionnaire on Internet access and use, reading and learning habits, as well as self-perceived ability to keep up with the medical knowledge was mailed.

Seventy-two (72%). percent of the respondents had Internet access either at home, at work, or both. Forty-eight percent of Norwegian physicians are reported using the Internet for professional purposes with a median of 60 minutes per week devoted to such activities; 54% (50-57) of male physicians and 37% (33-42) of female physicians used the Net actively in a medical context. Only 14% of the "Internet-active" physicians received email from patients. Searching the World Wide Web was the activity most frequently reported. Research-oriented male physicians 30-49 years of age indicated the highest activity on the Net. Physicians using the Internet for professional activities reported significantly longer working hours and more time spent on medical reading and attending medical meetings and congresses than others.

A research by Bard (2006) reveals widespread adoption of core activities such as visiting professional journals online, accessing information from professional

societies, and searching literature databases. Certain activities that have become widespread in the U.S. market have yet to attract a core group of international physician users. One key example is electronic detailing, where adoption rates significantly lag the U.S. market. There is substantial room for growth in this area due to a lack of interest, offerings, and awareness among European physicians. Additionally, there are considerable differences in adoption when comparing country-by-country trends, with Spain typically lagging behind the average adoption rates, while the United Kingdom leads the pack - a finding that underscores the necessity of localizing physician marketing efforts. For instance, the majority of European physicians still demand professional content online in their native language. That said, the data reveal a core group of key indicators surrounding learning and promotional preferences that can drive best practices for e-marketing strategies across Europe and on a global basis.

Ken Masters (2006) has engaged in a worldwide survey to determine doctors' reasons for using the Internet, and the factors that influence their usage. Because he was attempting to examine a global picture, and because Internet infrastructure varies internationally, the studies were grouped according to the region in which they had been conducted. For purposes of context, the percentage of doctors reporting Internet access is also given and compared to the national average percentages as given by the International Telecommunications Union (ITU). According to the results, on average, 60–70% of physicians had access to the Internet. On the specific use of the Internet, the studies offered respondents a wide range of activities from which to choose. In the five studies where more than 50% of the respondents found the Internet useful, 89% had an email account. Some studies reported on the relationship between usage and demographic factors. One study indicated a negative correlation on practice size, and one study indicated a negative correlation on generalists versus specialists. Common wisdom, perhaps based on the male/female ratio in Information Technology fields, would lead one to believe that males use the Internet far more than females. While the studies showed a slight tendency towards this, it is by no means clear-cut, with seven studies showing low or no correlation whatsoever. It is true, however, that no studies indicated a significant reverse correlation. There is also still a strong correlation between age and usage, with the younger doctors using the Internet more. Connectivity was also a pre-requisite for

usage, but the usage figures in the research indicated that connectivity does not automatically lead to usage. In most of these countries, Internet access is widespread. Yet, the impact of obstacles such as time, workload and effort, cost, confusion, and concerns of liability and confidentiality illustrated that the path to greater and effective use of the Internet is not merely the supply of infrastructure. Although lack of skills features low on the list of barriers, in any activity, there is a natural relationship between skills and the effort and time taken to perform a task. The high percentage (89%) of doctors reporting patients' bringing Internet information to the consultation is interesting, especially when compared to the much lower percentage of doctors searching for patient-specific information on the Internet (44%) or referring their patients to web sites (20%). An interesting connection existed between generalists and primary physicians as opposed to specialists. There was certainly a greater tendency for specialists to use the Internet more than generalists. Similarly, results showed doctors in smaller hospitals using the Internet more than doctors in larger hospitals.

Ken Masters' study shows a dominance of North American studies, and all but one of the studies are from the Northern Hemisphere. All the countries fall into a group defined by the ITU as "high income" with an average 2002 Internet penetration of 44.5%. Not a single study was from a developing country. For this reason, the mean access cannot be taken as a global picture, but chiefly a picture of the developed world. The high rate of Internet usage amongst doctors compared to their national norms is not entirely surprising, as they point to a correlation between education levels and adoption and usage rates of new innovations and technologies. There is a fact that perhaps the most important concern is infrastructure for developing countries. Although infrastructure in developing the expertise required, are to be expected, and will need to be addressed if the Internet is to contribute to effective healthcare delivery. Further consistently designed studies, particularly in developing countries are required to complete the picture. Countries needs to be addressed, efforts aimed at improving infrastructure for Internet access must be accompanied by efforts to overcome the other major obstacles.

2.2.5 The Prescribing Decision

It is useful for this study to examine healthcare phenomena, such as physicians' drug selection behaviours, as they are currently evolving in different countries and regions. In what sense can internet satisfy the relative needs, or turning to prescription behaviour, can be then understood better.

In Turkey, the medical profession is rapidly changing. This change involves conflict between traditional culture and global culture, in terms of both the physician's role in society and the role of market forces in healthcare. Traditionally, physicians have been accepted as unquestioned authorities, by their patients and themselves alike. Now many physicians in Turkey are becoming increasingly like hospital employees or independent bodies, and as such they are subject to the same influences on professional behaviour. (Kisa, 2006)

The existing literature has studied the effect of marketing activities on physician's choice at various levels. Most research finds the influence of marketing efforts of pharmaceutical firms on prescriptions to be significant. This result has been robust and has been found with pooled regressions (Neslin 2001), fixed-effects distributed lag regressions (Mizik and Jacobson 2004), log linear models (Rizzo 1999), diffusion models (Hahn and others, 1994), physician level choice models using aggregate data adjusting for endogeneity of prices (Narayanan, 2004), and physician level models using patient data. (Bhatia,2006)

AcNielsen Research Company has done a research in Turkey, to determine the factors, influencing prescription behaviour. Although it's a general research, it can give a brief idea about physician types and their prescription behaviours. For this research, 450 physicians, min. 2 years experienced, mostly cardiologists, who see minimum 50 patients a week, were surveyed. According to the research, there are mainly 4 factors that influence prescribing behaviour. (AcNielsen Project Innovation, 2007)

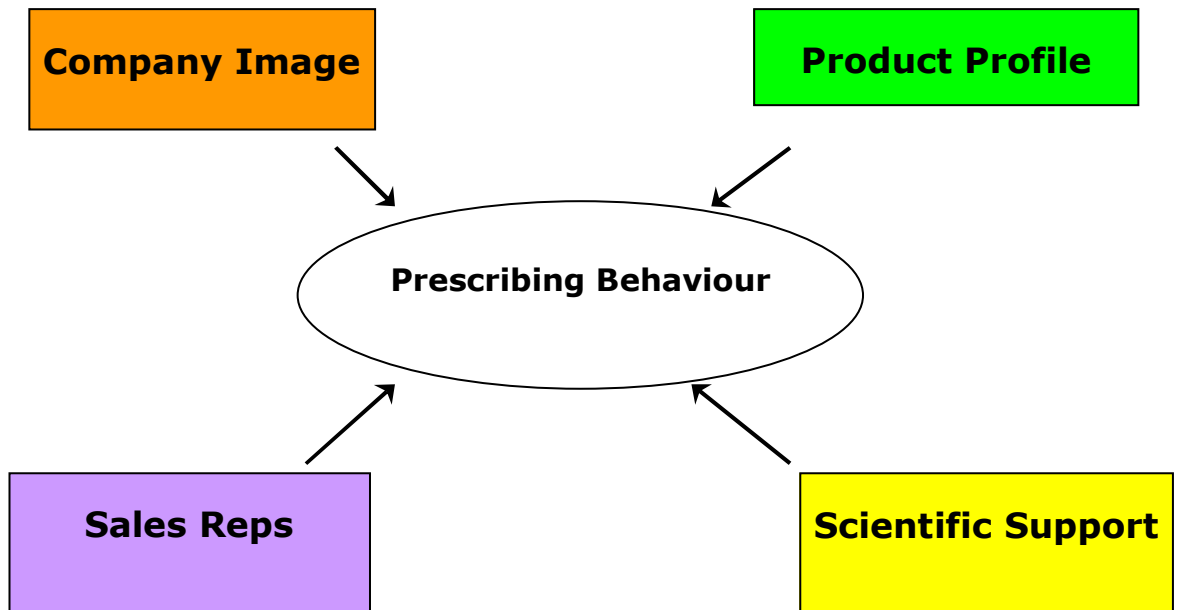


Figure 2.2 : Physician Prescribing Behaviour

The underlying factors of these 4 main influencers are summarized below:

Company Image: Provides value for money, innovative company, ethical company, strong brand, reliable company, wide product range.

Product Profile: Effective in weak, medium and strong cases, decreasing mortality, efficiency, long half-life, less side effects.

Scientific Support: Objective information about products, brochures, literature and journal support, samples, useful promotion materials, patient brochures, internet subscription, congress participation support, medical meetings.

Sales Representatives: Ethical behaviour, regular visits, good communication, rapid response, long term relationship, resourcefulness, knowledgeable of the products, experiences, visit duration.

According to the findings of the research, there are 4 groups of physicians.

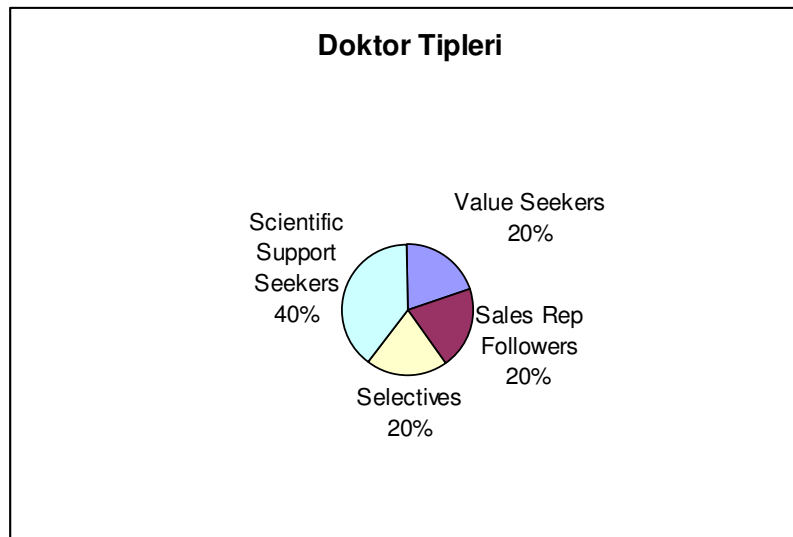


Figure 2.3 : Physician Behaviour Groups

The largest group, “Scientific Support Seekers” has described the following factors, as having the largest effect on their prescription behaviour: Long term relations of the sales reps, supplying medical journals and internet subscriptions, medial meetings and congresses. These findings shows that different physician types show different reaction to the marketing efforts but this effect can not be under-emphasized.

(Kisa, 2006) conducted a study to identify factors that influence prescribing decisions among physicians in Turkey. This study is important because the factors that influence physicians’ prescribing behaviours are difficult to quantify and have rarely been acknowledged especially in Turkey. For the purpose of the study, 156 physicians in a Ministry of Health Hospital in Ankara were surveyed. The majority of the participants reported that pharmaceutical representatives were their main source of information about new drugs on the market. Regarding peer influence on drug selection, 75% of the physicians reported being affected by department heads and colleagues in the same specialty. Generic drug issues were also important, with 74% of the participants agreeing that for drugs having the same active ingredients, local versus foreign distinctions should be made to protect national interests, and 88% completely agreeing/agreeing that the patient’s economic level and social security must be considered in drug selection. In addition, important concerns were gathered regarding ethical issues and patient drug use. Almost all of the physicians (94.2% or n=147) completely agreed/ agreed that laboratory analysis results have to

be considered in drug selection. On whether time required for recovery must be considered in drug selection, 132 physicians (84.6%) completely agreed/agreed that it must be considered. It's important that half of the physicians in this study completely agreed/agreed that promotional campaigns affect physicians' drug selections (51.9%, n=81). Most physicians completely agreed/agreed that the patient's economic level and social security must be considered in drug selection (87.1% or n=136). About 75% of the participants (n=116) completely agreed/agreed that physicians working in hospitals, when selecting drugs, are affected by department heads and colleagues in the same branch. Regarding drug firms' drug demonstration activities, 46.8% of the physicians (n=73) agreed that the drug demonstration activities of drug firms are sufficiently informative. Similarly, 43.6% of the physicians (n=68) agreed that when a drug is being selected, attention must be paid to the name of the firm that produces it. In terms of drugs having the same active ingredients, the majority of the participants (72.4% or n=113) completely agreed/agreed that local versus foreign distinctions should be made to protect national interests. About 96% of the physicians (n =149) completely agreed/agreed that patient-drug match and drug contraindications have to be considered when prescribing drugs. Two-thirds of the participants completely disagreed/disagreed that the concept of "expensive drugs have good quality" is true (66.9% or n=103). Nearly all participants (98.1% or n=153) completely agreed/agreed that ease of use from the patient's perspective should be considered when selecting drugs. About 75% of physicians (n=116) completely disagreed/disagreed that physicians can use opportunities provided by drug companies when they prescribe a particular drug, and that this can be considered ethical under current economic conditions. On the question of setting aside enough time for drug selection, two-thirds of the physicians completely agreed/agreed that they do so even when patient duties are intense (67.3% or n=105). Nearly all participants completely agreed/agreed that they obtain and use new information from a scientific perspective in drug selection (96% or n=149). Half of the physicians (50% or n=78) completely agreed/agreed that continuing education programs organized by professional medical organizations contribute importantly in keeping physicians informed about developments in the pharmaceutical sector. Two-thirds of the physicians completely disagreed/disagreed that sufficient scientific information and guidance on other points requiring attention when prescribing drugs are provided to medical students during their education (66%

or n=103). As can be seen in the findings, the effect of promotional activities, on prescribing behaviour are still regarded as an intimate issue, because it has the risk of being confused with the ethical problems. However, this is not really based on very rational support, because there are equivalent remedies among which doctors have the right to choose from. The “ethics” can be questioned of course, if a doctor chooses a medication on top of the other, although it’s not the best decision to make, but supports his own benefits.

3. CONCEPTUAL MODEL

The core focus of this study is pharmaceutical marketing to health experts. From an international perspective, excluding the United States, e-marketing is clearly a physician-focused strategy. Due to regulatory restrictions, consumer advertising and online promotion are not viable options for pharmaceutical e-marketers.

As a result of these limitations on consumer marketing, the real opportunity for impact lies with physicians.

Internet technology has enabled health professionals to obtain and share increased amounts of health care information and to track and monitor diseases. In addition, the Internet has allowed physicians throughout the world to collaborate, communicate, and interact. (Chew and others, 2004). The Web serves as a source of physician education and decision support. There are many opportunities on the web, like textbooks, journals, online courses, self-assessment examinations, alerting services, email consultations to colleagues, access to clinical guidelines, and decision support programs. Physicians report increased use of the Web during office visits with patients and for continuing medical education purposes off hours. (Wald and others, 2007) This great database is of course most widely sourced by commercial pharmaceutical drug companies.

The existing literature has studied the effect of marketing activities on physician's choice at various levels. Most research finds the influence of marketing efforts of pharmaceutical firms on prescriptions to be significant.

Buckley (2004) has underscored the internet sources of drug companies, in the context of marketing. He described the drug marketing process, by the model below in Figure 3.1, which shows the information flow from drug companies, both to consumers and doctors. It also shows the power that consumers, informed by DTCA and the Internet, have in "pulling" prescription drugs from doctors. In Turkey, DTCA is banned, but internet continues to affect doctors directly, and also indirectly,

through consumers. However, the influence of consumers' opinions on doctors is not within the scope of this study. The main area of interest is the relationship indicated with the red arrows, the influence of drug companies on doctors, through internet.

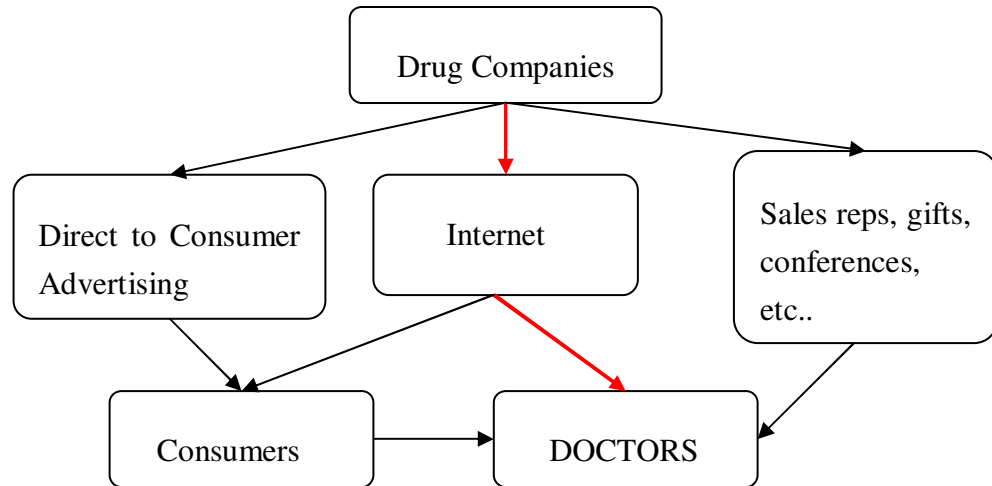


Figure 3.1 : The Information Flow in Pharmaceutical Marketing

Our model is about the red arrowed line of Buckley's model and it aims to define the value that internet based activities of drug companies contribute to. The main aim of undertaking the cost associated with internet activities can of course be defined by several reasons like scientific support, increasing physician expertise etc.. but it would not be wrong to state that the main objective is increasing profits, and that is, increasing the number of prescriptions by the physicians. Whether these efforts help to increase the prescriptions is an important question to know, because marketers are being held accountable for their budget allocations as measured by the number of new prescriptions. But whether internet costs contribute to these efforts work or not, is still in question. Based on such a sense, our model is built to firstly understand the expectations of physicians from the online sources of the pharmaceutical companies, and further clarify the effects of online marketing efforts of pharmaceutical companies, on the prescription behaviours of physicians.

Our model states that the website quality of a pharmaceutical company has positive effect on the prescription behaviours of the physicians that visit this company's website. This effect on the prescription behaviour could be explained by various factors, but the main effect comes both directly from the web site and also through increasing the company's image.

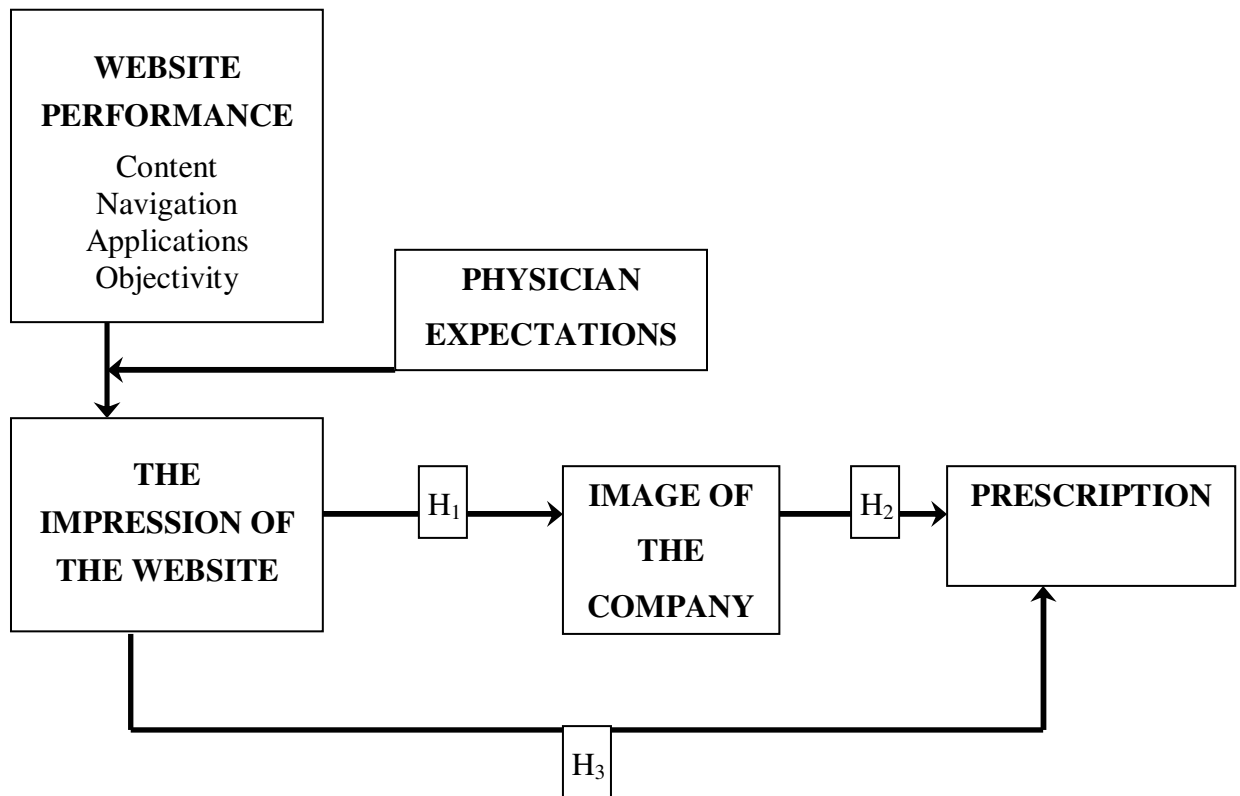


Figure 3.2: Conceptual Model

This perceived quality (impression) as this study assumes, has a direct effect on the prescription behaviours of the physicians. It also assumes that the perceived quality also has effects on increasing the pharmaceutical company’s image. And company/brand image, as the literature shows, has direct positive effect on the prescription behaviour.

In this model, “the perceived website quality” is very important to determine. Because quality is a relative concept. Quality is defined as “the totality of characteristics of an entity that bear on its ability to satisfy stated and implied needs.” (Bell and Tang, 1998) For quality to be evaluated, these needs have to be defined and translated into a set of quantitatively or qualitatively stated requirements for the characteristics of an entity that reflect the stated and implied needs. (Aladwania and Palviab, 2001) For these reasons, we have to define the website quality concept for physicians who use internet.

Liu and Arnett (2000) named such quality factors as accuracy, completeness, relevancy, security, reliability, customization, interactivity, ease of use, speed, search functionality, and organization. Huizingh (2000) focused on two aspects of web

quality: content and design. Wan (2000) divided web quality attributes into four categories: information, friendliness, responsiveness, and reliability. The authors highlighted the importance of factors such as download speed, web interface, search functionality, measurement of web success, security, and Internet standards. Kim and Others(2006) defined perceived web quality as users' evaluation of a web site's features meeting users' needs and reflecting overall excellence of the web site and identified three dimensions of web quality: technical adequacy, web content, and web appearance. Our model harmonizes these dimensions into 3 main criteria: Content, Navigation and Innovativeness. Kim and others' study is similar for these 3 aspects. We also add objectivity as the last criterion, an indispensable indicator of a pharmaceutical information quality.

Most importantly, in this study it's assumed that a physician's idea about a positive aspect of a website does not necessarily mean that it creates a value for the physician. For example a physician might think that the design was really good in a website, but this does not have a significant meaning for him, because design is not an important factor in assessing the quality of a website, according to him.

In this study, it's important that the quality of the website should be measured from the physicians' perspective. Existing literature on the pharmaceutical website quality is often viewed from ethical perspective or consumer perspective, which arises the need to establish a new measure which incorporates the pharmaceutical web site quality and physician perspective. That's why, we researched both the main characteristics of the site and also what the physician expects from that site. This adds a new moderating variable to the model, which is the "expectations of the physicians from the website"

The performance of the website, together with the moderating effect of the expectations of the physicians, forms the "perceived quality" of that site.

Based on these assumptions, our first set of hypothesis are as follows:

H1: The more positively physicians perceive the quality of a pharmaceutical company website, the more likely they are to form a positive image of that company

H1a: The more positively physicians perceive the content of a pharmaceutical company website; the more likely they are to form a positive image of that company

H1b: The more positively physicians perceive the navigation of a pharmaceutical company website; the more likely they are to form a positive image of that company

H1c: The more positively physicians perceive the innovativeness of a pharmaceutical company website; the more likely they are to form a positive image of that company

H1d: The more positively physicians perceive the objectivity of a pharmaceutical company website; the more likely they are to form a positive image of that company

At the beginning of 1990s some corporate executives predicted that web sites will be capable of influencing companies' image significantly (Dyson, 1997). In today's e-business environment this influence is becoming evident, forcing companies all over the world to pay attention to web site features and making company's web image the focus of major corporations and their executives in particular (Jon, 2001). More and more companies are aware that the web site design is becoming a very important issue for them (Agarwal and Venkatesh, 2002)

Some authors are of the opinion that competitive advantage is just another benefit that can be achieved by paying considerable attention and having a well designed web site. Recently, however, the focus of many corporations is on facilitating more effective transformations to the web-enabled business environments, and the importance of improving users' experiences is becoming widely evidenced. Furthermore, as web sites represent companies' interface with the customers, the quality of the web sites and presence of particular features is crucial for bringing in the benefits. (Kuzic and others, 2005)

Content of the web site can determine whether the potential customer will stay on the web site or never to be seen again (Gehrke and Turban, 1999)

Many companies are aware that a well defined content of the web site can contribute to the building of a good brand image. The direct effect of perceived website quality on the image of the pharmaceutical company comes from that, innovativeness has been advanced as an essential image characteristic in terms of marketing effectiveness. Companies with an innovative image are typically associated with unique marketing programs, R&D-oriented and being modern and up-to-date. There is ample evidence that innovative companies are perceived in more favourable terms than non-innovative firms in terms of credibility and expertise, perceived quality, purchase likelihood and market share size. (Ruyter and Wetzels, 2000)

Apart from innovativeness, a pharmaceutical company can strengthen its image through internet, by many opportunities. Needle (1964)'s model defined the qualities that construct the image of a pharmaceutical firm. At the end of the research he demonstrated that the image of a pharmaceutical corporation has a direct bearing on behaviour toward the corporation or its products. In his scale, there are various dimensions which can be strengthened via internet.

Product Image: Its products are of consistently high quality, Has good drugs in many different product areas, Its products are reasonably priced

Service Image: It keeps physicians adequately informed about its products, Has been a real help to the medical profession, Helps practicing physicians keep up to date on medical developments, It is interested in serving the practicing physicians, not just in promoting its products, It is interested in serving the public, not just in making money

Detailing Image: Its detail men are well informed and helpful, Has high calibre detail men

Advertising Image: Its advertising and promotion to physicians are dignified and restrained, You can believe what it says about its products, It presents adequately the side effects and contraindications, as well as the advantages of its products, Its product claims are consistent with broad clinical evidence

Research Image: Its research has produced products of major significance, A leader in research, Outstanding on new product development, Outstanding on clinical investigation, Very good on finding new uses for existing products

Miscellaneous: Has real integrity, A rapidly growing company, It's pleasant to do business with them, Known for high calibre management

As can be seen, there are factors other than innovation that can be communicated via internet

The second hypothesis in our model is described below:

H2: The more positively physicians perceive the image of a company; the more likely they are to prescribe that company's products.

In fact, it has long been recognized that the brand name is the dominant cue in decision making by many consumers. A brand provides identification and continuity in the marketplace and is the most visible extrinsic cue to the consumer. Corporate image represents a powerful link to brand image and purchasing behaviour (Hsieh and others, 2004). Defined as consumer's attitudes toward a company, corporate image can create new beliefs about a firm, which in turn influence attitudes toward products and product preferences (Homer, 1990; Simmons and Lynch, 1991). Corporate image not only adds value but also creates a halo effect for all of a company's products (Hsieh and others, 2004). In the context of counterfeits, the corporate image of original manufacturers versus counterfeiters plays an important role. Buying counterfeits may be considered hazardous, as the risks incurred are manifold, ranging from financial, performance, and physical, to psychological and social risks (Tan, 2002). To reduce these risks, consumers are likely to rely on information about the trustworthiness of a company (Gürhan and others, 2004). Richard and Van Horn (2004) suggested that brand names may have some direct influence on prescription choices of medical specialists, even among drugs that are therapeutically and therefore perhaps chemically the same. Research by Gonul and others (2001) also suggests that marketing activities and expenditure, and therefore brand name, may also influence prescription choices. Other research by Pincus (2004) suggests that the introduction of cheaper, chemically equivalent generics, in this case generics, only marginally changed the market share, by less than 1 percent

of all established branded products in this category, such as Prozac. This indicates the importance of brand name in repeat purchasing perhaps especially for new or innovative pharmaceutical products. Blanckett and Robins (2001) have underscored the importance of branding in the pharmaceutical industry. Their book endeavours to comment on all the major trends and provide some advice on how brands and the branding process can be made integral to future business strategy. They examine the chief drivers of change, in particular the internet and the growth of direct-to-consumer advertising; government policy; the ageing population; the prescription to OTC 'switch'; and trends in communication and brand building, together with the complex regulatory frameworks that circumscribe these. But throughout they have tried to focus on the value-adding contribution that strong brands can make to corporate performance. They have found that each pharmaceutical brand has now become so well known that it stands for a set of distinctive characteristics and benefits, the net impact of which is the belief on the part of prescribers, pharmacists and consumers that the brand is superior to imitations. In a competitive situation this belief may not be strong enough to justify paying more, but given parity – or near-parity – in price then the tried and trusted brand will usually enjoy an advantage. A strong image and brand, therefore, has the ability to command reliable cash flows.

The 3rd set of hypothesis is as follows:

H3: The more positively physicians perceive the quality of a pharmaceutical company website; the more likely they are to prescribe that company's products.

H3a: The more positively physicians perceive the content of a pharmaceutical company website; the more likely they are to prescribe that company's products.

H3b: The more positively physicians perceive the design of a pharmaceutical company website; the more likely they are to prescribe that company's products.

H3c: The more positively physicians perceive the innovativeness of a pharmaceutical company website; the more likely they are to prescribe that company's products.

H3d: The more positively physicians perceive the objectivity of a pharmaceutical company website; the more likely they are to prescribe that company's products.

There is not much literature research that studies on a direct relationship between pharmaceutical website performances but several studies have qualitatively explained a relationship.

Cutts and Tett (2003) have stated that continuing medical education is known to influence prescribing and this statement is most likely to be met at easier access to information through information technology (Internet and computer prescribing packages)

Buckley (2004) has underscored the internet sources of drug companies, in the context of marketing. He stated that internet continues to affect doctors' prescription behaviours directly, and also indirectly, through consumers.

Our study will make its greatest contribution to the literature by clarifying the relationship between the website quality of a pharmaceutical company and direct effect of it on the prescription behaviours of the physicians that visit this company's website.

4. MODEL TESTING

4.1 Country Background: Turkey

Our study is mostly conducted in Turkey. Therefore, it would be useful to have a quick overview at the recent history of pharmaceutical sector in Turkey.

During the early Ottoman period drugs were generally prepared by physicians. Rooms called Hekim Dükkani (Physicians Store) functioned as drugs preparatory locations as well as treatment centers.

With widely use and increasing importance of medical preparations among physicians, pharmacists and the public, new drug compounds were prepared in pharmacies or laboratories

The first local drug preparations, formulated either in pharmacy laboratories or small workshops during the Pharmacy period, covering the period between 1833 and 1927, were prepared as mere imitations of imported and high-selling drug preparations. After a while the commonly used formulas by the renowned physicians of the time were prepared at pharmacies and presented to patients.

The number of local drug preparations in Turkey in 1930 was about 300, most of which were prepared at pharmacies while 20 of them at laboratories. What brought the end of small local pharmacies was The Foreign Capital Incentive Law enforced in 1954 paving the way for giant foreign pharmaceutical companies to come to our country to establish drug production factories, which coupled with the enforcement of The Pharmacies and Medical Preparations Laboratories Regulations dated 1954, which brought heavy financial responsibilities to the companies in question when they established factories and production facilities. Furthermore, the law required the allocation of a separate building for drug production. The mentioned points were mainly legislated with the entrance of foreign companies to the market, but caused

some small initiatives to get out of business and others to merge with foreign companies, thus maintaining their existence. (Uvey and others, 2004)

The Fabricated drug production in Turkey is a relatively recent period, started in 1952 with the establishment of Eczacıbaşı İlaç Fabrikası (Eczacıbaşı Pharmaceutical Factory) in Levent, Istanbul. With the requirement of regulations, many small local companies moved into their separate facilities, which they built with great effort, undertaking great financial difficulties, renewing their techniques and merging with foreign companies, thus keeping pace with the latest trend, that is, serial production. As a result of these developments, the all-local pharmaceutical preparations formulized by Turkish pharmacists were gradually left aside and foreign preparations were started to be produced (Abdi İbrahim, Eczacıbaşı, İbrahim Ethem, Fako, Mustafa Nevzat). While local firms maintained producing foreign products under license agreements, some foreign-based firms (Roche, Bayer, Sandoz etc.) started to produce at their own facilities. Harmonizing the accumulation of knowledge and experience gathered during the previous pharmacy-laboratory periods, the Turkish pharmaceutical industry, especially as of 1990, managed to improve itself by keeping pace with the latest technology and world standards. The golden period of the Turkish pharmaceutical sector started with the foundation of the Employers Union of Pharmaceutical Industry in 1964, aiming at moving in unison to be successful at world standards (Baytop, 2000)

Today, in 2007, according to the data from IMS (International Medical Statistics); There are 320 companies operating in the Turkish pharmaceutical industry;

- 96 pharmaceutical manufacturers
- 52 foreign companies
- 23.000 employees
- Over 5000 products

12 out of 52 companies operating with foreign capital have their own production facilities in Turkey. The others put their products in the market either through importing or fason production (UEIDC report, 2000)

In 2007, drug sale at the value of \$7 billion was realized in Turkey. According to the data belonging to 2007 regarding the treatment groups: antibiotics ranks first with 19%, painkillers second with 15%, drugs for cold, rheumatism drugs and vitamins rank next. (Seyhan,2006)

The Turkish pharmaceutical industry has acquired a level of quality, activity and trust so as to compete with many countries operating in the sector. In 1999 the export figures of the sector amounted to more than 50 countries including Germany, U.S.A, Belgium, Finland, Holland, England, Switzerland, Italy and Japan. However, the problems arising from the pricing system of Turkey, high level of Value Added Tax (VAT) rates, the drawbacks emerged in recent years have prevented the sector to obtain a high level of profit margin. (Uvey and others, 2004) Turkey's per capita pharmaceutical expenditure - the lowest in Europe - is still approximately USD 50. This is due to economic and cultural constraints, compared with Western countries.

In spite of these challenges, Turkey's total pharmaceutical production makes it 16th among the world's 35 leading pharmaceutical producing countries. It is the largest pharma market in the Middle East, and the fastest growing in the Mediterranean region. (Yesildere,2008)

It can be suggested that government control and regulations are strict, because the majority (approximately 70–80 percent) of drug purchases throughout the country are reimbursable through public sector agencies such as the Pension Fund and the Social Insurance Organization. (Kısa, 2006). That, at the same time means that the majority of sales are dependent upon prescription.

In Turkey, there's no concept as OTC. This means that according to the legislation, all drugs must be bought with a prescription. And DTC of pharmaceuticals is illegal.

The advertisement of prescription drugs to the public was prohibited in Turkey in accordance to the law passed in 1928 and 1994. According to the law of The Foundations and Broadcasts of the Radio and Television which was put into effect in 1994, advertising for the non-prescribed drugs was allowed on the condition that it met the following criteria, if they are open, reflecting the facts and can be verified, and protects the individual from harm. In 1996, The Ministry of Health declared that drugs be classified as prescribed or non-prescribed. Since then, several attempts have

been made by the Ministry of Health to allow drug advertising for non-prescribed drugs. However, other state organizations such as the Council of State have come out in opposition to this. As can be seen, while the non-prescribed drugs can be actually legally advertised, all drugs belong to prescription drugs category in Turkey and they can not be promoted to patients. (Semin and others, 2006)

The online health information search of patients, and whether they demand a particular brand from their doctors as a result of this search can not be under-emphasized, however it will stay out of focus of this study, since the pharmaceutical companies' efforts toward consumer advertising is actually illegal. However a further research is needed to examine the online behaviours of patients and their effects.

4.2 Methods

As stated before, this study is mainly based on understanding the value of the online marketing efforts of pharmaceutical companies and also helping pharmaceutical companies to better align their online marketing efforts with the expectations of the physicians. This model states that the website quality of a pharmaceutical company has positive effect on the prescription behaviours of the physicians that visit this company's website. This effect on the prescription behaviour could be explained by various factors, but the main effect comes both directly from the web site and also through increasing the company's image.

Although there is previous research on the related subjects, this study involved a previous exploratory research, because of both the sensitive nature of the concept and also the great variability in different countries. The development of hypothesis required consultation of both physicians and pharmaceutical experts. There had to be a balance between marketing point of view and physician point of view, in the development of the hypothesis. Before interviewing with physicians, in-depth questions had to be conducted with experienced health-care experts, in order to understand how to tap information from physicians better. After having an insight of the concepts of pharmaceutical online marketing, prescription behaviours, DTP advertising etc... With the help of literature and the in-depth interviews; attention was drawn to physicians. First, unstructured, later structured in-depth interviews

were conducted with them. Their input also helped the development of 20 survey questionnaire, which measured totally 62 items. Responses were recorded through the use of open questions and a Likert type scale, and then analyzed for the testing of the hypothesis.

4.3 In-Depth Interviews

When literature was studied about the related subjects, unstructured interviews were conducted with healthcare industry experts (Pharmaceutical Company Sales and Marketing Managers) and physicians. The objective of these unstructured interviews were to cause some preliminary issues to surface so that it would be known which issues need further investigation. That gave a grip on the variables that need greater focus, so that they were used in the structured in-depth interviews.

Structured In-depth interviews were conducted face to face with 18 physicians, from 7 different cities in Turkey. Face to face method was used, because establishing some rapport was important in gaining the trust of the interviewees. 11 of them (%61) were specialists, and 7(%39) were practitioners. 15 (%83) were seeing patients on a regular basis. The aim was both forming a basis for the questionnaire, and also identifying the responses, -and motivation of responses- of physicians. All interviews were made with physicians, who were active internet users. An audiotape was not used to record the answers, and notes were taken, because of the sensitive nature of the concept. It might have biased the respondent's answers, who could suspect that their anonymity was not completely preserved..

The concepts sought were as the following:

Name, specialisation, age, organization, the number of patients in a week: These were collected on basic descriptive assumptions, which will be examined in more detail on the survey.

The intensity and reasons of internet usage: This gave estimation on how to group the intensity and objectives of physician internet usage. The question was not directed by listing the reasons, but rather listening from the physicians about their main internet usage reasons. The majority (%78) told that searching for medical

information was their chief reason for using internet. The other reasons include e-mailing, reading the news, being up to date with the innovations.

The independent web sites: The physicians were questioned for their usage frequency and usage intensity of independent health web sites. Surprisingly, many physicians reported using the same well-known website (%55) and even more surprisingly, %82 of users reported visiting their favourite site more often than once a week. The most favourable section of websites was “diagnosis” section, reported by %43.

The pharmaceutical company web sites: The answers to this question were generally very different from each other. The most popular web site here had a hit of only %22. The intensity decreased a little here. %66 of physicians visited their favourite pharmaceutical company website more than once a week. Their favourite section is “Medical Journals”, with %50.

The quality of Pharmaceutical company websites: The physicians were generally pleased to see the advancements on internet in the last years, but were still sceptical about the objectivity of drug company websites. Some of them stated that the failure of objectivity in medical information can be a great turn-off for physicians, and this is even worse than supplying no scientific support at all. Because in time, this attitude causes a mistrust for the company, which is a very important part of a pharmaceutical company image.

Pharmaceutical website quality dimensions: The pharmaceutical website quality dimensions were questioned and to form an objective and comparable basis, and they were recorded on a Likert scale. The main qualities complied with what our conceptual model had assumed. However there were some sub-factors which were reported almost of no importance. This resulted in the elimination of some measures which were classified as “not very important” and “not important at all” by more than %90 of the physicians. Some examples include, “increasing the communication between patients and physicians.” and “fast opening of the pages”. These were not included later in the questionnaire

4.4 Survey

A cross-sectional study amongst medical doctors was conducted. A questionnaire was developed to test the hypothesis and it was prepared in Turkish.

The questionnaire was sent with an e-mail to nearly 300 physicians (from physician e-mail lists) and returned with a response rate of %46(140 responses). 85 physicians completed the survey by being handed out and returning immediately. 23 were interviewed on telephone. The reason of the difference in the methods used was mainly the great number of different people that had to be reached during a short period of time. Since our questions only had to be sent to physicians who were using internet, it was hard to obtain the contact information of such a specific group.

It was assumed that the returned questionnaire forms, which were used as data sources, contained honest responses. It was also assumed that the study participants accurately represented their group as a whole, within identified limitations. The participants of the study were informed about the confidentiality of their participation and responses, and were assured that the results would not be used for purposes other than those of the study. Also, some participants would like to see the results and were assured that this study would be published in a web page (www.pelinyilmaz.com) where they will be able to download later.

4.4.1 The Questionnaire Design

The 62-item questionnaire assessed baseline demographic data including gender, age, medical speciality, organization and questions concerning duration and frequency of internet usage, the importance of each website quality dimension, the last pharmaceutical company website visited, the performance of that website, the image of that pharmaceutical company which had prepared the site and the prescription behaviour towards that company. The questionnaire comprised two sets of items. The first set evaluated actual use of the Internet and attitudes toward website dimensions and last visited website. The second set concerned the image of the company and the prescription behaviour toward that company. Questions were presented as open-ended, grouped or Likert scales: generally 1 (very positive) to 5 (very negative). The questionnaire was pilot-tested and finalised with the approval of 5 physicians.

The questionnaire was designed to capture sincere answers where physicians are aware of the ethical marketing practices. This was made clear in the instruction part of the questionnaire, in which the purpose of the research was briefly given. Pretests and in-depth interviews had confirmed that respondents had a good understanding of the phenomenon. The questionnaire is attached in Appendix B.

The questionnaire began with a selective question, which enabled the respondents to continue answering, only if they have visited a pharmaceutical company website in the last 3 months. However, this was usually asked vocally before handing out the questionnaire, both to save time and printed documents. Then, using the general durations and frequencies for obtaining a mean, physicians were first questioned about the duration and frequency of internet usage, using a Likert scale. Later, they were asked to evaluate several website performance dimensions, including the items associated with content, design, innovation and objectivity, which are the pharmaceutical web site performance criteria outlined earlier in section 3. A 5 five-point Likert scale was used. (1: definitely inadequate; 5: definitely adequate)

Then they were asked to write down or think about the last pharmaceutical website that they had visited. To protect the anonymity and get honest and sincere answers, it was indicated that they don't have to write down the company, only remember it for the following questions. This gained a totally new approach by the physicians and increased the trust that this research was really only for academic purposes. Later they were asked to evaluate the last pharmaceutical web site they visited in the past six months, using the same performance criteria. Again the same Likert scale was used. (1: definitely inadequate; 5: definitely adequate)

The following section consisted of 9 questions designed to assess the image of that pharmaceutical company (6 items) and the physician prescription behaviour for that company.(3 items) to the degree to which physicians gave a self-reported answer that reflected their beliefs and behaviours. A 5 point Likert scale was used. (1: strongly agree; 5: strongly disagree). The image dimensions were: "Positive image of the company", "Trusting to the company", "Respecting the company", "General idea of the company", "People's general idea of the company", "Comparison with the other pharmaceutical companies." These were questioned and to form an objective and comparable basis, and they were recorded on a Likert scale. The prescription

behaviour for the pharmaceutical company image dimensions were questioned via 3 items. The questions were: “I think this company is preferred for prescription”, “If under my speciality, I would prescribe its products”, and “If under my speciality, I would recommend this company to others for prescription.”

An additional section pertaining to the demographic characteristics was also included in the survey instrument. (age, gender, city, speciality, working organization, number of patients in a week.) These were all open-ended questions, which were coded and grouped later.

4.4.2 Sampling

Our sample consists of 242 Turkish physicians, who are either specialists or practitioners, and who are active internet users. Judgemental sampling method had to be used for this research, because there were a limited number of people who could provide answers to this research. It required special effort to gain access to the physicians, who were in the best position to provide the answers. There are several physician web communities and mailing groups on the internet. Mail addresses were obtained from these groups, which contain various specialities and also geographical coverage. Thereby, physicians could be reached across the country. Telephone-interviews also provided the same geographical coverage. Face-to face interviews were mostly conducted in İstanbul, however there were still physicians from different cities.

Although the sample was chosen largely according to the availability of reputation data, still vast effort was placed on gaining a country-wide representative group, not only the most developed cities. However, due to the technological nature of the study, internet user physicians are resident largely in big cities. The high rate of Internet usage amongst doctors compared to their regions is not entirely surprising, The residents of the respondents were 31 different cities of Turkey. They were from 25 different specialities. Gender was represented equally in the sample as a whole. However, slightly more males were included in the sample, due to the general characteristics of the population studied.

4.4.3 Findings

A total of 240 doctors completed the survey. Collected data were transferred to a computer running SPSS 16.0 and general frequencies and descriptive statistics were used to get the feel for the data.

Participants were from 31 different cities and 7 different regions. Marmara, İç Anadolu and Ege were the geographic regions with the highest percentages of respondents. There can be seen a significant tendency that the majority of the respondents comes from developed regions, both due to the convenience of the regions, and also the difference in internet usage. The ages of the physicians were mostly between 31 and 50 (%69). Gender was represented equally in the sample as a whole. However, more males were included in the sample, due to the general characteristics of the population studied.

Doctor participants identified their specialty area as orthopaedics (%18,2), followed by practitioners (%12,8). There were no statistically significant differences found between specialities with respect to geographic distribution. Doctor participants

The organization that they worked at was reported as private hospital (%26,4), governmental hospital (%26), private office (%16,5), clinic (%9,5), polyclinic (%7,4). %14 of the respondents didn't belong to any of these groups.

They were asked about the frequency and duration of their pharmaceutical company website usage. The most common responses were "once in two weeks" and "once a month" (%31,4 and %30,6 respectively). Given as the answer to the usage duration, the most common responses were "3-4 hours per month" and "5-6 hours per month" (%31,4 and %23,6 respectively).

The results of the output are shown in Table 4.1

Table 4.1: The Simple Frequency Distribution of the Answers

		Count	Column N %
Yaş (Binned) / Age Groups	21 – 30	9	3,7%
	31 – 40	88	36,5%
	41 – 50	79	32,8%
	51 – 60	56	23,2%
	61+	9	3,7%
Bölge / Region	Akdeniz	25	10,3%
	Doğu Anadolu	4	1,7%
	Ege	30	12,4%
	Güneydoğu An	5	2,1%
	İç Anadolu	50	20,7%
	Karadeniz	16	6,6%
	Marmara	108	44,6%
Cinsiyet / Gender	erkek / male	172	71,1%
	Kadın / female	70	28,9%
Çalışılan Kurum / Organization	Özel Hastane / Private Hospital	64	26,4%
	Devlet Hastanesi / Governmental Hospital	63	26,0%
	Özel Muayenehane / Private Office	40	16,5%
	Sağlık Ocağı / District Clinic	23	9,5%
	Poliklinik / Policlinic	18	7,4%
	Diğer / Other	34	14,0%

Uzmanlık / Speciality	Anestezi	2	,8%
	Biyokimya	5	2,1%
	Biyoloji	1	,4%
	Cerrahi	9	3,7%
	Dermatoloji	15	6,2%
	Gastroentoloji	14	5,8%
	göğüs hastalıkları	16	6,6%
	iç hastalıkları	4	1,7%
	İmmünoloji	3	1,2%
	Jinekoloji	12	5,0%
	kalp-damar cerr	3	1,2%
	Kardiyoloji	13	5,4%
	kbb (kulak-burun-boğaz)	20	8,3%
	Nöroloji	2	,8%
	Onkoloji	10	4,1%
	Ortopedi	44	18,2%
	Patoloji	3	1,2%
	Pedagoji	16	6,6%
	Pratisyen	31	12,8%
	Romatoloji	5	2,1%
Üroloji	14	5,8%	
Bir haftadaki hasta sayısı (Binned) / Patients per week	<= 0	20	8,3%
	1 – 40	83	34,3%
	41 – 80	107	44,2%
	81 – 120	29	12,0%
	121+	3	1,2%
İnternet Kullanım Sıklığı / Internet Usage Frequency	3 ayda bir kez veya daha seyrek / Once in 3 months or more seldom	1	,4%
	2 ayda bir kez / Once in 2 months	38	15,7%
	Ayda bir kez / Once a month	74	30,6%
	2 haftada bir kez / Once in 2 weeks	76	31,4%
	Haftada bir kez / Once a week	37	15,3%
	Haftada birkaç kez / More than once a week	16	6,6%

The items, measuring the importance of the website performance dimensions for physicians, were all measured on a five point Likert Scale. The results are displayed in descending order. “Compliance with ethics” is the most valued quality, with a mean of 4,36. The minimum value of 3 indicates that there is not any physicians who considers ethics as “not very important” or not important at all”. “Objectivity of information” ranks as the second, with a mean value of 4,08. “Providing access to journals” has a mean value of 3,90, and is followed by “Currency of information”, which has a same mean value with “Wide medical database”. It’s surprising that “Customized service, a criteria that is not gained great acceptance, is valued with a mean of 3,72. Also, the variance is the highest for this item. It seems that there are two groups of physicians, one of which have discovered the utilization of customized service. “Easy understanding”, “Fast navigation”, “Total attractiveness” and “a Good organization”, which seems to very similar criteria, are ranked respectively: (3,58, 3,57, 3,55, 3,55). “Multimedia applications” have a mean value of 3,50, maybe rather low because of the lack of insight on what could be done using multimedia. Multimedia is still perceived as a quality, merely regarding design. Information about the chemistry of drugs and about the pharmaceutical company seems to be not highly important, with values of 3,55 and 3,20. The less important factor for the quality of a website seems like “Facilitating the information among physicians”, with a mean value of 3,12. The output is shown in table 4.2 below.

Table 4.2: Descriptive Statistics of “Website Performance Criteria”

Descriptive Statistics						
	N	Minimum	Maximum	Mean	Std. Deviation	Variance
Önem: Etik kurallara uyması / Importance: Compliance with ethics	242	3	5	4,36	,624	,389
Önem: Bilgilerin Tarafsızlığı / Importance: Objectivity of Information	242	2	5	4,08	,718	,516
Önem: Makalelere ulaşım sağlanması / Importance: Providing access to Journals	242	2	5	3,90	,786	,617
Önem: Verilen bilgilerin güncelliği / Importance: Currency of Information	242	2	5	3,86	,713	,508
Önem: Geniş bir Medikal Veritabanı / Importance: Wide Medical Database	242	2	5	3,86	,741	,550

Önem: Özel hizmet verilmesi / Importance: Customized Service	242	1	5	3,72	,890	,792
Önem: Web sitesinin Kolay Anlaşılır Olması / Importance: Easy to be understood	242	2	5	3,58	,708	,501
Önem: Web sitesinin bütün olarak göze cazip görünmesi / Importance: Total attractiveness	242	1	5	3,57	,744	,554
Önem: Aranan bilgiye hızlı ulaşılabilmesi / Importance: Fast navigation to information	242	2	5	3,55	,687	,472
Önem: Site düzeninin iyi olması / Importance: A good organization of the website	242	2	5	3,55	,711	,505
Önem: İlaçların içeriği ile ilgili detaylı bilgi olması / Importance: Information about Drug Chemistries	242	1	5	3,55	,767	,588
Önem: Multimedya uygulamalar ile ilginç hale getirilmiş olması / Importance: Multimedia Applications	242	2	5	3,50	,758	,575
Önem: İlaç firması ile ilgili detaylı bilgi içermesi / Importance: Information about the Drug Company	242	1	5	3,20	,870	,757
Önem: Doktorların bağlantı kurmasını kolaylaştırması / Importance: Increasing the communication between physicians	242	1	5	3,12	,842	,709
Valid N (listwise)	242					

In our research, 4 qualities were defined for pharmaceutical company website performance. They were content, design, innovation and objectivity. The factorial validity of these criteria was tested by submitting the data for factor analysis, to confirm whether or not the theorized dimensions would emerge.

The items, which were under: “importance of factors in a website” was submitted for factor analysis. The analysis revealed the items, which tapped 4 different dimensions:

The first item, which we had defined as “Content”: Wide Medical Database, Currency of Information, Information about Drug Chemistries, Providing access to Journals, Information about the Drug Company

The second item, which we had defined as “Innovation”: Customized Service, Multimedia Applications, Total attractiveness, Facilitating the communication between physicians.

The third item, defined as “Navigation”: Easy Navigation, A good organization of the website, Fast navigation to information

Objectivity: Objectivity of Information, Compliance with ethics

The interrelations among the groups are good, only “total attractiveness” seems to fit into both innovation and also navigation, however, it would fit better to define it under innovation, because navigation relates to utility of the design, not the aesthetics. The output of the factor analysis is shown in Table 4.3 below

Table 4.3: Factor Analysis of Pharmaceutical Website Quality Dimensions

	Rotated Component Matrix ^a			
	Component			
	1	2	3	4
Önem: Geniş bir Medikal Veritabanı / Importance: Wide Medical Database	,842	,029	,073	,100
Önem: Bilgilerin Tarafsızlığı / Importance: Objectivity of Information	,190	,050	,068	,885
Önem: Verilen bilgilerin güncelliği / Importance: Currency of Information	,792	,096	,039	,140
Önem: İlaçların içeriği ile ilgili detaylı bilgi içermesi / Importance: Information about Drug Chemistries	,792	,061	,100	,064
Önem: Makalelere ulaşım sağlanması / Importance: Providing access to Journals	,792	,074	,035	,096
Önem: İlaç firması ile ilgili detaylı bilgi içermesi / Importance: Information about the Drug Company	,697	,080	,072	,067
Önem: Web sitesinin Kolay Anlaşılır Olması / Importance: Easy Navigation	,100	,178	,854	,161
Önem: Site düzeninin iyi olması / Importance: A good organization of the website	,028	,375	,822	,021
Önem: Etik kurallara uyması / Importance: Compliance with ethics	,153	,066	,128	,881
Önem: Özel hizmet verilmesi / Importance: Customized Service	,049	,844	,103	,075

Önem: Multimedya uygulamalar ile ilginç hale getirilmiş olması / Importance:Multimedia Applications	,084	,851	,330	,042
Önem: Web sitesinin bütün olarak göze cazip görünmesi / Importance:Total attractiveness	,107	,637	,546	-,024
Önem: Aranılan bilgiye hızlı ulaşılabilmesi / Importance: Fast navigation to information	,129	,226	,870	,090
Önem: Doktorların bağlantı kurmasını kolaylaştırması / Importance: Facilitating the communication between physicians	,141	,794	,248	,054

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Later, these 4 factors were tested for the reliability of Cronbach's Alpha .The first one, Content had a Cronbach's alpha: 0,819.

“Information about the drug company” seems as the least related item. If it was deleted, the value would increase to 0,831. However, we keep this item because the values are still acceptable.

For Objectivity items, Cronbach's alpha is 0,760. The consistency of items in this measure is acceptable.

For Navigation, items have a reliability coefficient of 0,885, which .reflects a good measure of this concept.

For Innovation, Cronbach's alpha is 0,850. In this group of items, multimedia applications have the greatest role in the total reliability. If it was deleted, the reliability would decrease suddenly to 0,75.

For the purposes of our analysis, the website quality items included in our analysis were multiplied by the physician's actual degree of finding that item in the website. Based on such a sense, we added these together into a single summary measure and named it as: “The impression of the website”

(The importance of the website dimension for the physician) x (The degree of finding that dimension in the visited website) = The impression of the Website.

In our first set of hypothesis, we had proposed a direct relationship within the perceived quality of the website and the perceived image of that company. We will test the relationship via a regression analysis.

H1: The more positively physicians perceive the quality of a pharmaceutical company website, the more likely they are to form a positive image of that company.

H1 is supported. The R² for this regression is 0,2. Beta supports a strong relationship, with a value of 0,447. This means that the total quality of the website has direct effect on the image of the company. The findings are summarized below in table 4.4

Table 4.4: The Effect of Total Impression, on Company Image

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,447 ^a	,200	,197	,52927

a. Predictors: (Constant), Toplam Etki / Total Impression

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	16,823	1	16,823	60,054	,000 ^a
	Residual	67,231	240	,280		
	Total	84,053	241			

a. Predictors: (Constant), Toplam Etki / Total Impression

b. Dependent Variable: Firmanın toplam imajı / Total image of the company

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2,159	,165		13,095	,000
	Toplam Etki / Total Impression	,097	,012	,447	7,749	,000

a. Dependent Variable: Firmanın toplam imajı / Total image of the company

H1a: The more positively physicians perceive the content of a pharmaceutical company website, the more likely they are to form a positive image of that company.

H1a is supported. The R² for this regression is 0,119. Beta value is 0,345. This means that the quality of the content of a website has direct effect on the image of the company. The findings are summarized in table 4.5

Table 4.5: The Effect of Content Impression, on Company Image

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,345 ^a	,119	,115	,55552

a. Predictors: (Constant), etkicontent

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9,989	1	9,989	32,368	,000 ^a
	Residual	74,065	240	,309		
	Total	84,053	241			

a. Predictors: (Constant), etkicontent

b. Dependent Variable: Firmanın toplam imajı / Total image of the company

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2,627	,142		18,505	,000
	etkicontent	,057	,010	,345	5,689	,000

a. Dependent Variable: Firmanın toplam imajı / Total image of the company

H1b: The more positively physicians perceive the navigation of a pharmaceutical company website, the more likely they are to form a positive image of that company
H1b is supported. The R² for this regression is 0,124. Beta value is 0,352. This means that the quality of the navigation of a website has direct effect on the image of the company. The findings are summarized in table 4.6

Table 4.6: The Effect of Navigation Impression, on Company Image

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,352 ^a	,124	,120	,55387

a. Predictors: (Constant), etkinavigasyon

ANOVA^b

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	10,428	1	10,428	33,994	,000 ^a
	Residual	73,625	240	,307		
	Total	84,053	241			

a. Predictors: (Constant), etkinavigasyon

b. Dependent Variable: Firmanın toplam imajı / Total image of the company

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2,731	,122		22,460	,000
	etkinavigasyon	,054	,009	,352	5,830	,000

a. Dependent Variable: Firmanın toplam imajı / Total image of the company

H1c: The more positively physicians perceive the innovativeness of a pharmaceutical company website, the more likely they are to form a positive image of that company
H1c is supported. The R² for this regression is 0,112. Beta value is 0,335. This means that the quality of the innovation of a website has direct effect on the image of the company. The findings are summarized in table 4.7

Table 4.7: The Effect of Innovativeness Impression, on Company Image

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,335 ^a	,112	,108	,55768

a. Predictors: (Constant), etkiinnovation

ANOVA^b

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	9,412	1	9,412	30,264	,000 ^a
	Residual	74,641	240	,311		
	Total	84,053	241			

a. Predictors: (Constant), etkiinnovation

b. Dependent Variable: Firmanın toplam imajı / Total image of the company

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2,779	,120		23,178	,000
	etkiinnovation	,052	,009	,335	5,501	,000

a. Dependent Variable: Firmanın toplam imajı / Total image of the company

H1d: The more positively physicians perceive the objectivity of a pharmaceutical company website, the more likely they are to form a positive image of that company.

H1d is supported. The R² for this regression is 0,089. Beta value is 0,298. This means that the quality of the objectivity of a website has direct effect on the image of the company. However, it does not indicate a very strong relationship. The findings are summarized in table 4.8

Table 4.8: The Effect of Objectivity Impression, on Company Image

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,298 ^a	,089	,085	,56491

a. Predictors: (Constant), etkitotaltarafsızlık

ANOVA^b

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	7,465	1	7,465	23,391	,000 ^a
	Residual	76,589	240	,319		
	Total	84,053	241			

a. Predictors: (Constant), etkitotaltarafsızlık

b. Dependent Variable: Firmanın toplam imajı / Total image of the company

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2,851	,121		23,553	,000
	etkitotaltarafsızlık	,043	,009	,298	4,836	,000

a. Dependent Variable: Firmanın toplam imajı / Total image of the company

The regression analysis has shown that our hypotheses are confirmed and that there were paths between the impression of a website and company image.

The regression tests of the second set of hypothesis are below:

H2: The more positively physicians perceive the image of a company; the more likely they are to prescribe that company's products.

H2 is supported. As we had estimated, there is a strong relationship between a pharmaceutical company's image and the physicians' prescription behaviours towards that company. R2 value is 0,663, while Beta is 0,814. Results are shown in table 4.9

Table 4.9: The Effect of Company Image, on Prescription

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,814 ^a	,663	,662	,43953

a. Predictors: (Constant), Firmanın toplam imajı / Total image of the company

ANOVA^b

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	91,257	1	91,257	472,377	,000 ^a
	Residual	46,365	240	,193		
	Total	137,622	241			

a. Predictors: (Constant), Firmanın toplam imajı / Total image of the company

b. Dependent Variable: Firmanın reçetelemede tercih edilme derecesi / The prescription behaviour for the company

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-,305	,166		-1,841	,067
	Firmanın toplam imajı / Total image of the company	1,042	,048	,814	21,734	,000

a. Dependent Variable: Firmanın reçetelemede tercih edilme derecesi / The prescription behaviour for the company

The regression tests of the third set of hypothesis are below:

H3: The more positively physicians perceive the quality of a pharmaceutical company website; the more likely they are to prescribe that company's products.

H3 is supported. The R2 for this regression is 0,127. Beta value is 0,356. This means that the total impression of a website has direct effect on the prescription behaviour for that company. The findings are summarized in table 4.10

Table 4.10: The Effect of Total Impression, on Prescription

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,356 ^a	,127	,123	,70773

a. Predictors: (Constant), Toplam Etki / Total Impression

ANOVA^b

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	17,409	1	17,409	34,757	,000 ^a
	Residual	120,213	240	,501		
	Total	137,622	241			

a. Predictors: (Constant), Toplam Etki / Total Impression

b. Dependent Variable: Firmanın reçetelemede tercih edilme derecesi / The prescription behaviour for the company

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1,975	,220		8,958	,000
	Toplam Etki / Total Impression	,098	,017	,356	5,896	,000

a. Dependent Variable: Firmanın reçetelemede tercih edilme derecesi / The prescription behaviour for the company

H3a: The more positively physicians perceive the content of a pharmaceutical company website; the more likely they are to prescribe that company's products.

H3a is supported. The R2 for this regression is 0,118. Beta value is 0,344. This means that the content impression of a website has direct effect on the prescription behaviour for that company. The findings are summarized in table 4.11

Table 4.11: The Effect of Content Impression, on Prescription

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,344 ^a	,118	,114	,71115

a. Predictors: (Constant), etkicontent

ANOVA^b

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	16,247	1	16,247	32,125	,000 ^a
	Residual	121,375	240	,506		
	Total	137,622	241			

a. Predictors: (Constant), etkicontent

b. Dependent Variable: Firmanın reçetelemede tercih edilme derecesi / The prescription behaviour for the company

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2,250	,182		12,378	,000
	etkicontent	,073	,013	,344	5,668	,000

a. Dependent Variable: Firmanın reçetelemede tercih edilme derecesi / The prescription behaviour for the company

H3b: The more positively physicians perceive the navigation of a pharmaceutical company website; the more likely they are to prescribe that company's products.

H3b is supported. The R² for this regression is 0,060. Beta value is 0,245. This is not a very strong relationship but still significant The findings are summarized in table 4.12

Table 4.12: The Effect of Navigation Impression, on Prescription

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,245 ^a	,060	,056	,73415

a. Predictors: (Constant), etkinavigasyon

ANOVA^b

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	8,267	1	8,267	15,339	,000 ^a
	Residual	129,355	240	,539		
	Total	137,622	241			

a. Predictors: (Constant), etkinavigasyon

b. Dependent Variable: Firmanın reçetelemede tercih edilme derecesi / The prescription behaviour for the company

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2,643	,161		16,399	,000
	etkinavigasyon	,048	,012	,245	3,916	,000

a. Dependent Variable: Firmanın reçetelemede tercih edilme derecesi / The prescription behaviour for the company

H3c: The more positively physicians perceive the innovativeness of a pharmaceutical company website, the more likely they are to prescribe that company's products.

H3c is not supported. The R2 for this regression is 0,040. Beta value is 0,201. This means that the innovativeness of a company website does not affect the prescription behaviour towards that company.

Table 4.13: The Effect of Innovativeness Impression, on Prescription

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,201 ^a	,040	,036	,74176

a. Predictors: (Constant), etkiinnovation

ANOVA^b

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	5,571	1	5,571	10,125	,002 ^a
	Residual	132,051	240	,550		
	Total	137,622	241			

a. Predictors: (Constant), etkiinnovation

b. Dependent Variable: Firmanın reçetelemede tercih edilme derecesi / The prescription behaviour for the company

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2,762	,159		17,319	,000
	etkiinnovation	,040	,013	,201	3,182	,002

a. Dependent Variable: Firmanın reçetelemede tercih edilme derecesi / The prescription behaviour for the company

H3d: The more positively physicians perceive the objectivity of a pharmaceutical company website, the more likely they are to prescribe that company's products.

H3d is supported. The R² for this regression is 0,055. Beta value is 0,234. This is not a very strong relationship but still significant. The findings are summarized in table 4.14

Table 4.14: The Effect of Objectivity Impression, on Prescription

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,234 ^a	,055	,051	,73629

a. Predictors: (Constant), etkitotaltarafsızlık

ANOVA^b

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	7,514	1	7,514	13,861	,000 ^a
	Residual	130,108	240	,542		
	Total	137,622	241			

a. Predictors: (Constant), etkitotaltarafsızlık

b. Dependent Variable: Firmanın reçetelemede tercih edilme derecesi / The prescription behaviour for the company

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2,686	,158		17,030	,000
	etkitotaltarafsızlık	,043	,012	,234	3,723	,000

a. Dependent Variable: Firmanın reçetelemede tercih edilme derecesi / The prescription behaviour for the company

Mediation is a hypothesized causal chain in which one variable affects a second variable that, in turn, affects a third variable. The intervening variable is the mediator. It “mediates” the relationship between a predictor, and an outcome.

In our model, we had proposed that “image” was the mediating variable between impression of a website and prescription behaviour.

Baron and Kenny (1986) proposed a four step approach in which several regression analyses are conducted and significance of the coefficients is examined at each step.

The first step is conducting a simple regression analysis with website impression as an independent variable and testing its significance on prescription behaviour. We have already done that.

The second step is conducting a simple regression analysis with image predicting prescription behaviour. We have also found this relationship significant.

The third step is conducting a simple regression analysis with website impression predicting image.

We have found all these relationships significant and can proceed to next step, which is conducting a multiple regression analysis and testing the effect of website impression and image, together on prescription behaviour. The results are listed in table 4.15

The Beta Value was 0,356, in the relationship between website total impression and prescription. Now it decreased to 0,11. This shows that there is a partial mediation in our model.

The perceived quality (impression) of a website affects the prescription behaviour towards that company, both directly and through increasing its perceived image.

Table 4.15: The Mediation Effect

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,814 ^a	,663	,660	,44039

a. Predictors: (Constant), Firmanın toplam imajı / Total image of the company, Toplam Etki / Total Impression

ANOVA ^b						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	91,270	2	45,635	235,302	,000 ^a
	Residual	46,352	239	,194		
	Total	137,622	241			

a. Predictors: (Constant), Firmanın toplam imajı / Total image of the company, Toplam Etki / Total Impression

b. Dependent Variable: Firmanın reçetelemede tercih edilme derecesi / The prescription behaviour for the company

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-,288	,180		-1,603	,110
	Toplam Etki / Total Impression	-,003	,012	-,011	-,257	,797
	Firmanın toplam imajı / Total image of the company	1,048	,054	,819	19,515	,000

a. Dependent Variable: Firmanın reçetelemede tercih edilme derecesi / The prescription behaviour for the company

5. CONCLUSION

The internet is undoubtedly one of the biggest social revolutions of our times and has a great potential to contribute to improving worldwide health outcomes by increasing health literacy and access to information. We know that healthcare information is the number one reason for internet use, and so it should be possible to harness that interest even more. However, it's important to provide a measurable evidence to companies for undertaking the effort associated with constructing a reliable, wide and innovative online database.

Much remains to be known about the online marketing management of pharmaceutical products. In terms of the promotional mix, findings from this study and prior research indicate that promoting drugs is most effective when targeted to physicians directly and indirectly through information sources physicians use. While physicians rely upon their experiences, they also rely upon medical information.

Our study reveals two "pathways" that describe why pharmaceutical companies should incorporate the Internet into their practice. The first pathway is related to the image of the company. A good and physician targeted website helps in increasing the image of the company. It has long been recognized that the brand name is the dominant cue in decision making by many physicians. A brand provides identification and continuity in the marketplace and is the most visible extrinsic cue to the physician. Corporate image represents a powerful link to brand image and prescription behaviour.

The second pathway goes directly from the website to prescription behaviour. When this happens, using the Internet will lead physicians to helpful information, which they will utilize in their daily lives.

All 4 web dimensions that we have defined (content, navigation, innovation and objectivity) have an effect on the prescription behaviour towards a pharmaceutical

company. However, innovativeness of a pharmaceutical website has no direct effect on prescription behaviour. However, it still effects prescription behaviour through increasing the image of that company.

6. MANAGERIAL IMPLICATIONS

In the last couple of years, the trend for the pharmaceutical industry marketing investments has undergone major changes.

Some years ago, traditional media represented the main communication channels, nowadays, the development of new media, the continuous challenges of the market due also to stricter government regulations and the not always positive public perception of drug marketing have brought pharmaceutical companies to change their marketing strategies, preferring new communication channels to dialogue with their customers.

These are reasons leading pharmaceutical industry marketing managers are moving investments, historically devoted to traditional media, towards online promotion activities. The need to plan investments in a more rational and measurable way is certainly one of the main reasons of this trend. The ease in measuring the return on investment, which is a characteristic of online promotion channels, together with the great interactivity of these tools, allows pharmaceutical companies to keep a more direct contact with their users, which makes investments in ads and sales reps less efficient. A website, in fact, is more and more perceived as a meeting place with one's own customers, a channel to inform but, at the same time, to promote one's own brand.

It is evident, then, that now the most important need in this field is the will to make investments which are mainly measurable and effective. The lack of tracking tools, data and methodologies capable to precisely evaluate the return of investments made, typical of more traditional means, has contributed to the stall phase in which industry is now. The planning of strategic online marketing activities and a greater need to develop relationships with customers (loyalty) are the needs that pharmaceutical marketing professionals perceive to be most urgent and important. Even if today the market is not completely ready for these changes, in the very near future the net is

certainly going to play a more important role in this field, representing an opportunity for development and imposing new strategic choices in pharmaceutical industry communication. This study shows clearly that the online pharmaceutical marketing spending is tangible and trackable.

However, using new technologies like the Internet for marketing purposes is a challenge for the pharmaceutical industry. There are undoubtedly many reasons for this cautionary approach to new technology. The pharmaceutical industry, for one thing, is very heavily regulated. Every aspect of its marketing is closely watched by politicians, regulators, and the general public. One false step could mean millions in lost revenue, not to mention good will.

Pharmaceutical marketers take into account many factors when deciding the marketing mix for a drug: the therapeutic category, the life cycle stage of the drug, reach and frequency criteria, past experience, the competitive landscape, return on investment (ROI), outside advice, and gut feelings.

Another factor to consider, especially when dealing with computer-enabled promotions (websites, e-mail, podcasts, eDetails, behavioral targeting, etc.) is a risk vs. benefit analysis. Impact is determined by reach, credibility, and content richness whereas risk can be thought of as potential to cause customer dissatisfaction or pushback, increased regulation, negative publicity, etc.

For these reasons, it is wise to know what the risks are and to balance the risks against the benefits. This study also shows what physicians find appropriate and favourable in terms of online marketing.

The use of technology in future marketing channels will provide more convenience, personalization and control (as in being able to access and control what you want to get) and engagement. All this will increase the impact that these channels have on the target audience.

7. LIMITATIONS AND FUTURE DIRECTIONS

Our findings have several limitations. First, the cross-sectional nature of the survey arises the need to question the physicians for the “last” website they visited. This could lead to a bias, for example, the last webpage they visited can be ,with greater possibility, a website that they visit frequently, and a drug that they already prescribe.

Further studies, specifically cohort studies that examine the exposure of physicians to health-related information on the Internet over time, are necessary to determine the effect more clearly.

Second, though our sample size is adequate, our survey was only done to a judgemental sampling group, of which contact information was available and convenient. Therefore it may not be generalized to other populations or settings.

Third, our instrument measured websites in using the Internet among many activities. Many other health-related activities are possible using the Internet, but were not brought up by members of our focus groups, so they were not included, assuming that they would not be used by enough individuals to allow useful analyses to be performed.

Fourth, our survey relied on self-report of Internet interest and prescription. A more valid method may have been to install software on individuals’ computers to record websites that were visited, and also follow the prescriptions that they have written, by IMS. This would have allowed us to use participant’s actual prescription as a dependent variable, rather than self-reported variable. These methods were used recently in study examining ways that consumers search for and appraise the quality.

An area for future exploration is the total number and percentage of physicians who are actually using internet

In addition, an interesting topic for further research would be an examination of consumer targeted web-sites and their effect on doctor prescription behaviour, through patients..

A final area of useful future research would be to develop methods for arriving at optimal combinations of the various online marketing tools.

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APPENDIX A: IEIS Pharmaceutical Companies Internet Website Application Guidelines

The guidelines consist of four main parts. The subtitles for these parts are aim, general rules, home page, site for healthcare professionals. The content of these four parts is given as follows:

1. Aim

The most significant responsibility of the drug industry is to provide quality and safe drugs and to transfer the information concerning these drugs in a true and unbiased manner in accordance with the medicinal product promotion guidelines in order to assure their rational use by no doubt.

To achieve this aim, pharmaceutical companies (drug producers, importers, and distributors) can design (and update when in need) websites on the Internet comprising information related to their firms, list of their products, and patient package inserts approved by the Ministry of Health, information related to the drug promotion for the healthcare professionals, information on health issues related to their products, and the medical advances.

2. General rules

- Internet websites are held subject to the rules of IEIS Medicinal Product Promotion Guidelines.
- Pharmaceutical companies are responsible for their own website design.
- If personal information is obtained from the visitors of the website, this information should be kept secret.

3. Home page

Home page of the pharmaceutical company should have the following characteristics:

- There should not be any pharmaceutical product advertisement in the home page.
- There should be clear information on the mail address, e-mail address, phone and fax number of the pharmaceutical company which owns the website.
- The last date the website has been updated should be indicated.
- It should be indicated for whom the website (or the sections of the website) is designed for. Information to the public and the links should be on the home page.
- In case of instructions to the public when diseases are described, references should be indicated.
- The information should be appropriate for the intended target group.
- There should be a phrase stating that “This website cannot replace regular discussions with your doctor and pharmacist”.
- Information for the healthcare professionals and for the public should be separate in two sections. At the top of the section designed for healthcare professionals there should be a disclaimer stating that the section is designed solely for healthcare professionals. Also there can be a password for preventing the entrance of unauthorized persons.

Owner of the website assigns someone/a body responsible for the website and the name of this responsible person/body is indicated at home page of the website.

4. Sites for healthcare professionals

- In these pages given information and promotional activities should be in accordance with the “Medicinal Product Promotion Guidelines” prepared by IEIS.

- Information on the website should be prepared by the experts on the subject and the designer of the site should be indicated with its references. Otherwise there should be a clarification.
- In product promotion any information conflicted with the patient package insert and brief product information that are approved by the Ministry of Health cannot be used advocating/ stating that it is approved in other countries.
- When providing “links” to other sites related to the medicinal products there should be a disclaimer stating that the information in that site is not under the responsibility of the pharmaceutical company, activities may not be in compliant with the Turkish Republic regulations and texts can be different than the ones approved by the Ministry of Health.

Due to the changes made by the Ministry of Health, updating of the information related to the products is under the responsibility of the owner of the website of the pharmaceutical company.

APPENDIX B : The Questionnaire

TÜRKİYE'DE HEKİMLERİN, İLAÇ FİRMALARININ İNTERNET ÜZERİNDEKİ AKTİVİTELERİNE KARŞI TUTUMU İLE İLGİLİ BİR ARAŞTIRMA

Bu anketi tamamlamanız, yukarıda ismi geçen **akademik araştırmaya** büyük katkı sağlayacaktır. Doktorlarını ilaç firmalarının internet üzerindeki aktivitelerine karşı tutumu ile ilgili en doğru bilgiyi **siz doktorlardan** alabileceğimiz için, bu anketi içtenlikle cevaplamanızın önemi büyüktür. Cevaplarınız ve kimliğiniz kesinlikle **gizli kalacak** ve bu araştırmanın sonuçları, tamamen akademik araştırmalar için kullanılacaktır. Katkınız için teşekkürler.

Yrd. Doç. Dr.
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İşletme Mühendisliği Bölümü
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Pelin Yılmaz
Yüksek Lisans Öğrencisi

- **Lütfen her sorudaki uygun şıkkı işaretleyiniz**
- **Eğer cevap veremeyeceğiniz bir soru varsa geçip ankete devam ediniz. Cevaplandırabildiğiniz kadar çok soru cevaplandırınız.**

1- Mesleki konularla ilgili internet'i kullanıyor musunuz?

? Evet ? Hayır(Anketi sonlandırın)

2- Son 2 ay içinde bir ilaç firmasının internet sitesini ziyaret ettiniz mi?

? Evet ? Hayır(Anketi sonlandırın)

3- İlaç firmalarının web sitelerine, hangi sıklıkta giriyorsunuz?

? Haftada birkaç kez ? 2 haftada bir kez ? 2 ayda bir kez
? Haftada bir kez ? Ayda bir kez ? 3 ayda bir veya daha seyrek

4- İlaç firmalarının web sitelerinde ortalama ne kadar zaman geçiriyorsunuz?

? Ayda 10 saatten fazla ? Ayda 5-6 saat ? Ayda 1-2 saat
? Ayda 7-10 saat ? Ayda 3-4 saat ? Ayda 1 saatten az

5- Aşağıdaki listede, bir ilaç firmasının web sitesinde bulunabilecek bazı özellikleri kendiniz için;

1: Hiç önemli değil 2: Önemli değil 3: Ne önemli, ne de önemsiz 4: Önemli 5: Çok önemli anlamına gelmek üzere, 1 ile 5 arasında puanlandırınız:

Bir ilaç firmasının web sitesini kullanırken

	Hiç Önemli Değil	Önemli Değil	Ne Önemli Ne Önemsiz	Önemli	Çok Önemli
Geniş bir medikal veritabanı olması	1	2	3	4	5
Medikal bilgilerin tarafsızlığı	1	2	3	4	5
Verilen bilgilerin güncelliği	1	2	3	4	5
İlaçların içeriği ile ilgili detaylı bilgi olması	1	2	3	4	5
İlaç firması ile ilgili detaylı bilgi içermesi	1	2	3	4	5
Makalelere ulaşım sağlaması	1	2	3	4	5
Etik kurallara uyması	1	2	3	4	5
Web sitesinin kolay anlaşılabilir olması	1	2	3	4	5
Aranan bilgiye hızlı ulaşılabilmesi	1	2	3	4	5
Site düzeninin iyi olması	1	2	3	4	5
Web sitesinin bütün olarak göze cazip görünmesi	1	2	3	4	5
Multimedya uygulamalar ile ilginç hale getirilmiş olması	1	2	3	4	5
Kayıt olduğunda, kişiye özel hizmet sunulması	1	2	3	4	5
Diğer hekimlerle bağlantı kurmaya olanak veren bir platform içermesi	1	2	3	4	5

6- Son ziyaret ettiğiniz, ilaç firmasına ait web sitesi hangisiydi?.....

7- Son ziyaret ettiğiniz ilaç firmasına ait web sitesini düşündüğünüzde, aşağıdaki listedeki özellikleri, sitede bulunma derecelerine göre 1-5 arasında puanlandırınız :

1: kesinlikle yetersiz 2: yetersiz 3: ne yeterli ne yetersiz 4: yeterli 5: kesinlikle yeterli

Web sitesini son ziyaret ettiğiniz ilaç firmasının web sitesinde

	Kesinlikle yetersiz	Yetersiz	Ne yeterli Ne yetersiz	Yeterli	Kesinlikle Yeterli
Medikal veritabanı	1	2	3	4	5
Medikal bilgilerin tarafsızlığı	1	2	3	4	5
Verilen bilgilerin güncelliği	1	2	3	4	5
İlaçların içeriği ile ilgili bilginin detay düzeyi	1	2	3	4	5
İlaç firması hakkındaki bilginin detayı	1	2	3	4	5
Makalelere ulaşım sağlaması	1	2	3	4	5
Etik kurallara uyması	1	2	3	4	5
Web sitesinin kolay anlaşılabilir olması	1	2	3	4	5
Aranan bilgiye ulaşım hızı	1	2	3	4	5
Site düzeni	1	2	3	4	5
Web sitesinin bütün olarak göze cazip görünmesi	1	2	3	4	5
Multimedya uygulamalarının ilgi çekiciliği	1	2	3	4	5
Kayıt olduğunda, kişiye özel hizmet sunulması	1	2	3	4	5
Diğer hekimlerle bağlantı kurma olanakları	1	2	3	4	5

8 - Son ziyaret ettiğiniz ilaç firmasına ait web sitesini hazırlayan ilaç firmasını düşündüğünüzde, aşağıdaki cümleleri, size uyma derecelerine göre 1-5 arasında puanlandırınız:

1: Kesinlikle katılmıyorum 2: Katılmıyorum 3: Ne katılıyor, ne de katılmıyorum 4: Katılıyorum 5: Kesinlikle Katılıyorum.

	Kesinlikle Katılmıyorum	Katılmıyorum	Ne katılıyor Ne katılmıyorum	Katılıyorum	Kesinlikle Katılıyorum
Bu firma hakkında düşüncelerim olumlu	1	2	3	4	5
Bu firmaya güveniyorum	1	2	3	4	5
Bu firmanın saygın bir firma olduğunu düşünüyorum	1	2	3	4	5
Bu firmanın ürünlerinin doktorlar tarafından reçetelenmede tercih edildiğini düşünüyorum	1	2	3	4	5
Bu firmanın ürünleri benim uzmanlık alanımda olsaydı reçetelerdim	1	2	3	4	5
Bu firmanın ürünlerini reçetelemeleri için meslektaşlarıma tavsiye ederim	1	2	3	4	5

9- Bu firma hakkındaki genel fikrinizi, aşağıdaki en uygun seçeneği işaretleyerek belirtiniz.

Çok Olumsuz 1 2 3 4 5 6 7 Çok Olumlu

10- Sizce diğer insanların bu firma hakkındaki genel düşünceleri en çok hangisine uymaktadır? Lütfen en uygun seçeneği işaretleyiniz.

Çok Olumsuz 1 2 3 4 5 6 7 Çok Olumlu

11- Bu firmayı, ilaç sektöründeki diğer firmalarla karşılaştırdığımızda onlara göre konumu sizce nedir? Lütfen en uygun şıkkı işaretleyiniz.

Çok Kötü 1 2 3 4 5 6 7 Çok İyi

12- Yaşınız? _____

13- Cinsiyetiniz? ? Erkek ? Kadın

14- Yaşadığınız Şehir? _____

15- Uzmanlığınız? _____

16- Çalıştığınız kurum?

? Özel Hastane ? Özel Muayenehane ? Poliklinik

? Devlet Hastanesi ? Sağlık Ocağı ? Diğer _____

17- Haftada ortalama kaç hasta görüyorsunuz? _____

CEVAPLARINIZ İÇİN ÇOK TEŞEKKÜRLER...