

## Analyzing Pharmaceutical Industry

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### Abstract

Marketing is a social process manifested on the market. Rather than in an isolated vacuum, organizations operate in a complex dynamic environment. Organizations' efforts are aimed at using business opportunities and averting (or neutralizing) dangers. A substantial number of top organizations are engaged in continuous efforts to influence a large number of factors from their environment so as to channel (or harmonize) their state and movement with their own interests. Within any organization, marketing bears the greatest responsibility for making insights into the environment and responding to challenges they face. A substantial part of sources dealing with the basics or principles of marketing is devoted to the analytic definition of environmental forces making a direct or indirect impact on business operations.

**Key words:** *Pharmaceutical market; Marketing of pharmaceutical industry; Marketing Environment; Pharmacy – Novi Sad*

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### Objectives

#### The Specific Elements of Marketing Environment

Analyzing arguments on environment proposed by Kotler (1997), Dickson., *et al.* (2002), Boone and Kurtz (2004), it is easy to perceive the common denominators in defining the complex macro and micro marketing environment. Boone and Kurtz (2004, p. 63) present the concept of environment management in terms of marketing's task to anticipate and influence 'the competitive, political-legal, economic, technological, and social-cultural' trends so as to attain the organization's goals. As one of the most significant authors on pharmaceutical marketing, Smith (2002) qualifies his approach to marketing as environmentalist, thus highlighting the importance of environment factors for marketing in pharmaceutical industry. According to Smith., *et al.* (2002), environment factors in pharmaceutical marketing are defined at three levels – as elements of interior, exterior and mezzo environment – where this approach is apparently based on defining relationships between marketing mix elements, the company's goals and resources, and environment factors found in Dickson., *et al.* (2002) and Boone and Kurtz (2004). The essential value of content analysis of individual environment elements according to Smith., *et al.* (2002) is undeniable, but the way they are laid out seems ambiguous and does not enable drawing a clear distinction of controlled and uncontrolled, i.e. direct and indirect impacts on the industry's marketing practices.

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The consumer is represented at the detailed analytic level, as a key factor of the internal environment, in a manner that strains viewing the 'big picture' from the producer's aspect. Mezzo environment, or intermediate environment according to Smith, *et al.* (2002), is defined by the instruments of marketing mix, competitive environment and the company's internal environment. Marketers accustomed to traditional views of marketing may find such a setup confusing. Without diminishing the significance of content and elements for the successful management of pharmaceutical marketing, we shall try to elaborate the further analysis of '... the actors and forces outside marketing that [directly and indirectly] affect marketing managements ability to' (Kotler, Armstrong, 2001, p. 87) create and deliver value added to the target market through a more rational and clearer framework of mutual influences. [1-3]

## Introduction

Analyzing the functioning of pharmaceutical companies, Campbell (2005) views the moving forces on the demand side and defines them through three key roles: physicians as prescribes, final consumers or patients, and organizations as payers that cover the complete or part of the costs of pharmaceutical products. The usual set of people in decision-making on the purchase of pharmaceutical products is divided into three key agents of demand on this market. Our target market is influenced by a set of external (macro-) environment factors, which are beyond the company's control, at least not in the short term and directly.

These factors could be classified into several groups: social and cultural, legal and political, economic, technological, natural and demographic environment. Between the external environment (creating the dispositions of the target market) and the target market it lies the mechanism of influence through variables that an organization can control, manifested as marketing mix instruments. With due appreciation of the key idea of marketing, the consumer/patient remains the central element, but their decisions to purchase and use pharmaceutical products (especially prescription drugs) are not independent; they are primarily determined by the influence of both prescribes and payers. All three actors on the demand side are influenced by a large number of (macro-) environmental factors, determining their process of information gathering, decision making and behavior on the pharmaceutical market. At the same time, designing marketing mix instruments, pharmaceutical companies strive to influence the agents on the demand side, in a complex competitive environment. Macro-environmental factors act as a specific 'prism', affecting directly and simultaneously the design of marketing mix (supply) and constituents on the demand side: prescribes, patients and payers. Pharmaceutical industry marketers must understand the influence of macro-environmental elements on the target market's decision-making process and, at the same time, incorporate the influence of these elements into the creation and delivery of value to consumers through an appropriate marketing mix. [4-6]

## Strategic Position Analysis

### Patients, Prescribers, Payers

The final consumer of pharmaceutical industry products is the patient. Concentration of power (Edersen, Wintz, 2002) within the consumer role is the result of easier access to education, information and growth in the purchasing power, due to which 'consumers expect to have a much greater say in their own medical treatment.' (David, 2001, p. 5). 'Today's and tomorrow's patients are demanding, informed and sophisticated.' (Dunn, *et al.* 2008, p.18). Pharmaceutical industry and its marketers have the task of understanding the consumers in their patient role, their motivation and decision-making process, as these parameters will reflect powerfully on generating the appropriate marketing mix.

As '...health care does not work like a normal market' (Feki, 2005, p. 3), generators on the demand side, and thereby the target market for pharmaceutical companies, also include the prescribes and health care payers. In its original meaning, the role of prescribes belongs to physicians, i.e. persons legally authorized to write a prescription, i.e. prescribe a drug. In a wider sense, we can also define the role of unofficial prescriber for over-the-counter product category, when the patients can be influenced to buy a drug by a pharmacist, or any other person from the patient's/consumer's environment whom (s)he trusts and believes that their advice may lead to the expected outcome.

In a significant segment of pharmaceutical product range (especially by the criterion of sales value), the decision on which specific product a consumer/patient will use is made by the prescriber. Health care payers, basically, define the availability of individual drugs to consumers, as they refund the cost of the given pharmaceutical or a part thereof. Motives guiding prescribers and payers significantly impact on the formation of demand for particular pharmaceutical products. A detailed analysis of patients, prescribers and payers as generators of demand on the pharmaceutical market will be presented in the subsequent sections, since the complex motives and influences of these groups make up the specific features on the demand side distinguishing the pharmaceutical market from the 'normal' market. [7,8].

### **Competitive Environment and Marketing Mix**

Pharmaceutical market is a complex system in which a large number of stakeholders strive to achieve their interests. Market supply is created by a huge number of pharmaceutical companies, but the product scope and the geographic scope, according to M.E. Porter (2008), impose the conclusion that the definition of the pharmaceutical market is set at an individual company's strategic level. To paraphrase an analogy, if we speak of a very widespread, well-known and common product such as a pain killer, are we talking about the same market if we refer to the sale to a final consumer/patient, and the sale of this product to a hospital? Although it is the same product in terms of chemical composition, any similarity ends within the production cycle, and marketing this product towards target markets from that point on implies two separate strategies, as suggested by Porter (2008, p. 91).

On the one hand, when the buyer is an individual consumer/patient, purchasing a small quantity of product in commercial packaging through an extensive distribution channel (of pharmacies), the producer can use extensive promotion, whereas if a hospital is cast in the role of buyer, the applicable conditions and rules remind of the B2B (corporate) market. Geographical definition of the industry – local or global – results from differences existing in the structure of the industry/market at different geographic levels.

From the aspect of a pharmaceutical company, Porter's revolutionary view of five forces shaping a company's strategy, set as early as 1979, is a useful and logical tool for understanding the competitive environment and an efficient tool in considering and defining business strategy. The specific features of the competitive environment of the pharmaceutical industry are analyzed in detail as specific features on the supply side, while marketing mix instruments are the subject of the subsequent chapter of the study. [9,10]

### **Marketing Macro-Environment**

In respect of the macro-environment from the aspect of their influence on the market actors, both on the demand and the supply side of pharmaceutical products, a need is imposed for a detailed analysis of individual forces and influences on the pharmaceutical market. The macro-environment sets the overall framework of conditions and mutual influences determining all the aspects of behavior of market actors. Porter and Kramer (2006) illustrate the relationship between the individual elements of macro-environment and the company's competitive advantage, highlighting the importance of accomplishing the company's goals by accomplishing the goals of society. [11-13].

### **Social Environment and Culture**

Behavior of an individual within a society is, primarily, a behavior pattern acquired through the socialization process. Culture is the key and most comprehensive determinant of attitudes, values, preferences and behaviors. A person's actions in the numerous roles (s) he takes on in his/her daily life, including the role of consumer or patient defined by attitudes. Social attitudes are 'attitudes of socially relevant phenomena, which are not characteristic only of an individuality found more or less expressed in all or most members of a society or group.' (Rot, 004, p.365).

In view of the fact that attitudes are an integrated form of three basic entail functions – cognitive, emotional and conative – meaning that the decision making process is related to a given situation/issue, and voluntary behavior will be determined by attitudes. When discussing socio-cultural environment in the marketing context, a special attention is paid to the fact that membership of particular groups

(nation, culture, sub-culture, religious nomination) determines the way people view themselves, others, organizations in their environment, society they live in, nature, and the general view of the universe (based on Kotler, Armstrong, 2001).

It is logical to suppose that a particular set of attitudes within a culture also applies to attitudes towards health, the patient, the health care system, therapies etc., and we are also witnessing a transition of individual attitudes placing new challenges before the health care system (as well as pharmaceutical industry). In view of the fact that the US market absorbs almost half of the world's production of pharmaceutical products, how could one define American culture? It is justifiable to suppose that the population of the USA is at the highest risk from a medical point of view? These statistics, in fact, reflect the process of medicalized society (Smith., *et al.* 2002).

Modern Western culture has brought about a general socially adopted pattern of seeking solutions to everyday problems by seeking medical help. To take the example of a person suffering from workplace-related stress, lack of time and tension, the person's quality of life is at risk, and (s)he decides to consult a physician (as lack of time, stress and tension acquire the epithet of a treatable pathological condition).

The person has thus 'medicalized' his/her problem. The physician undertakes to treat the consequences, prescribing drugs that treat some of the symptoms rather than causes that have led to the unwanted condition. The drug's short-term effect additionally confirms that both the patient and the physician are taking appropriate steps. In the long run, humanity sees pharmaceutical industry as a solution to a wide range of problems, albeit aware that a substantial number of drugs treat symptoms rather than causes. The question rightfully asked is, in what way is the manner of resolving the inner dissatisfaction or discomfort that an individual feels socially acceptable? Petryna and Kleinman (2006) criticize severely Western society and the 'fetishization' of pharmaceutical products.

One of the best-selling drug categories in the developed world are antidepressants, and the authors quote an example of mass (ab) use of antidepressants on the US school population. Drugs Ritalin and Adderall are very often prescribed against attention deficit disorder, and reliance on pharmaceuticals for resolving problems enables contemporary society to avoid facing '...problems of family, the lack of public financing for schools, school discipline, and child rearing.' (Petryna, Kleinman, 2006, p. 9). In the final instance, American experience shows that it is the parents, rather than psychologists, that insist on giving diagnoses and prescribing therapy, which may lead to a conclusion that seeking 'pharmacological solutions' to certain problems is often a product of popular culture rather than an essential medical standpoint.

The existence of identical (or better to say similar) problems in another society will probably be solved differently, so that assistance may be sought within the family or another social group; assistance may be religious, and a primitive society may resort to magic. Society's response to a perceived problem with a certain solution is, essentially, a demonstration of socially acceptable behavior. Research into consumers' habits and behavior on the pharmaceutical market can give useful insights into culture and socially acceptable behavior in this consumption segment. Research conducted by Mintel consultancy on 18412 adult respondents in the USA in 2004 contains data on the frequency of use of, e.g., OTC analgesics ('OTC Analgesics US', Mintel, May 2005), where it was established that a US adult reaches for an over-the-counter pain killer 9 times a month on the average.

A point-of-sale survey carried out on a random sample of 330 customers in pharmacies in Novi Sad in July 2006 reveals that in our country, an adult has taken OTC analgesics 3.25 times (D. Pantelić, 2006). According to the same research, almost 1/3 respondents in the US 'admitted' taking higher doses of drugs than recommended, while in the survey carried out in our country this figure does not exceed 5%. Without deeper analytic approach to this data, it is clear that it is very important for the pharmaceutical industry to understand the general attitude to treatments and medicines prevailing on a given market, as a result of specific culture or social norms determining an individual's behavior. [14,15].

### Quality of Life Concept

One of the goals of each society is to have healthy population; every organized society is aware that achieving that goal requires investing appropriate resources – time, energy and money. Looking upon the developed part of world, diagnosis and therapy are no

longer primary goals of the health care system, logic is switching toward prevention and removing consequences of disease endured. One much discussed concepts is 'quality of life,' which represents the specific goal of society that needs to be taken in to account by the health care system (and pharmaceutical industry).

The main question is how to measure quality of life? Quality of life is '...one of those concepts that everyone knows, no one can really define, but of which is easy to give examples.' (Smith., *et al.* 2002, p 49). Without intention to pursue philosophical discussion of what it is and how it is measured, the concept starts to be interesting from a marketing perspective of how one can 'sell' quality of life, particularly what it exactly can mean to the patient/customer:

- presence of absence of disease symptoms,
- body image and mobility,
- toxicity and/or side effects of therapy,
- psychological, social and spiritual dimensions,
- ability to perform everyday asks and/or roles,
- therapy costs and effects,
- Personal satisfaction or feeling healthy, and similar.

Quality of life remains concept that proves to be hard to define and quantify but has a crucial importance in understanding motivation and resulting behavior of consumers at health care (and pharmaceutical) market. As well as attitudes, culture is a relatively permanent category, but it does not mean that it is absolutely unalterable. Cultural values, attitudes and preferences are subject to change, which is most often long-lasting, evolving and incremental. Marketer's task is to follow any changes in the culture, as such changes inevitably lead to changes in behavior patterns on the target market.

One of the socially controversial issues is that of birth control. Although technological preconditions for the production of oral contraceptives, popularly known as the Pill, had existed much earlier; its social acceptability in the USA did not come about before the sexual revolution of the 1960s. The 'culture gap' concept represents a situation in which technology can offer solutions which a culture (or society) cannot accept at the given moment. The use of various methods of attaining goals of society in terms of health care of its members will be strongly influenced by '...cultural values, political attitudes, economic circumstances, and technological capacities' (Smith., *et al.* 2002, p. 44).

### Legal and Political Environment

According to Kotler and Armstrong (2001), the essential reasons for regulating business environment are contained in three assumptions:

- providing competitive relations (protection of organizations);
- consumer protection; and
- Protection of the interests of society as a whole.

Czinkota., *et al.* (2006) point out that legal and political environment make a direct impact on all marketing mix instruments. Through its provisions and prohibitions, legislation determines a large number of marketing decisions – 'designing, labeling, packaging, distribution, advertising, and promotion of goods and services.' (Boone, Kurtz, 2004, p. 68). Bone and Kurtz's position is relevant to any product category, but in the pharmaceutical market domain, the influence of legislation can also be extended on R/D, obtaining sale licenses, even the production process itself.

A certain level of regulation of the prices of pharmaceutical products is also commonly found. Health care and pharmacy are often a subject of lively debate in the political life of any country, as the availability of health care and access to pharmaceuticals are sensitive social issues, and in view of this, this subject becomes one of the central issues in electoral campaigns anywhere in the world.

The specific nature of products and their use requires regulations in the industry which should, at the same time, protect the public/society by providing safe and efficient drugs, preventing marketing practices which mislead in terms of efficiency and effectiveness of a drug, while on the other hand it should 'pave the way' to the market for essential required therapies with a potential to improve the quality of life, or even save lives. Smith., *et al.* (2002) present a chronology of the development of legislation regulating the production of and trade in pharmaceuticals on the US market, which is a specific chronology of the relationship between the pharmaceutical industry and its environment, abstracting the key interests of society/the public and the formation of a quantum of information on pharmaceuticals and their impact on the organism. [16,17]

- The Federal Food, Drug and Cosmetic Act (FFDCA) of 1938 required that drugs be labeled with adequate directions for safe use;
- The 1938 Wheeler-Lea Amendments to the Federal Trade Commission Act provided that the 'consumer has a right to rely upon statements contained in advertising', regulating for the first time the promotion of pharmaceuticals;
- In 1951, the Durham-Humphrey amendments to the FFDCA established the distinction between prescription and OTC drugs;
- The 1962 Kefauver-Harris Amendment to the FFDCA introduced a requirement for drug manufacturers to provide evidence of the effectiveness and safety of their drugs before approval.

In Serbia, a set of laws and regulations defines the functioning of the health care system, as well as the production, distribution and trade in pharmaceuticals, where the key piece of legislation covering the functioning of the pharmaceutical market is the Law on Drugs and Medical Devices of 2004, and a direct impact is also made by a set of regulations on the pricing of medicines. This Law also established the Agency for Drugs and Medical Devices, as the basic institution regulating the pharmaceutical trade on the market of the Republic of Serbia. In view of such a structure of goals from the social point of view, a specific legislation was developed for chemical industry, which '...combines active company and industry self-regulation with governmentally enforced standards.' [18,19].

(Campbell, 2005, p. 6). Often the standards imposed by the industry and various nongovernmental associations are more rigorous than the legislative provisions. In view of the high level of regulations pertaining to pharmaceutical production and trade, we can rightfully conclude that pharmaceutical products have the status of controlled substances. A separate aspect of legislation with a significant impact on pharmaceutical production and trade is legislation on the protection of intellectual property.

Pharmacy as a science and trade has a long-standing tradition in this region, but the succession of institutions and industry is fragmented, i.e. interrupted by historical hardships and new beginnings in which this area has abounded. The origins of governmental management are found in the National Pharmacy, and then the National Chemical Laboratory established in 1859 by Prince Miloš Obrenović. The first appointed Head Chemist was Pavle Ilić, who had previously held the position of the State Apothecary (according to [www.ihtm.bg.ac.rs](http://www.ihtm.bg.ac.rs), accessed May 2008). [11,14].

### **Economic Environment**

The relationship between pharmaceutical industry and the economic environment is best described within a 'fact of life' (Smith., *et al.* 2002, p. 45) – the unlimited demand for health care is confronted with limited resources for its funding. Economic environment is defined by the changes in revenues and changes in the structure of expenditure (Kotler, Armstrong, 2001). In addition to revenue, Boone and Kurtz (2004) point out that economic environment is defined by the stage in the business cycle of an economy, by inflation and unemployment rates, and by resource availability, while some authors highlight the population's purchasing power and price of capital as the determinants of economic environment (Czinkota., *et al.* 2002). In view of the complex nature of economic environment, its key feature is that it affects the availability of all product categories, including pharmaceuticals, i.e. the availability of health care. As an example illustrating the impact of economic environment on choices in health care, we could draw comparisons between treatment choices in the USA and Serbia. In search of solutions to health problems, people from lower income brackets in the USA often opt for self-treatment and OTC drugs, thereby avoiding the high costs of visits to medical practitioners; whereas our situation is reversed – non-affluent people try to find solutions to their medical problems through the national health care system which guarantees medical care and a certain level of treatment to all categories of population.



At the same time, those with good medical services (or insurance) plans in the USA seek professional help for minor health problems as well, as this is guaranteed by their insurance, which also covers the costs of visits to doctors. In addition to patients, economic environment also greatly influences health care payers such as the state or insurance companies. Health care cost control is done through defining the so-called drug formularies – positive lists of drugs (but also treatment types, such as surgical interventions) financed from health care plans.

Costs of drugs (and treatment) not included in drug formularies are fully covered by end users, i.e. patients. Payers' decisions thereby indirectly affect the choice of drugs (therapies) made by prescribers. In his article 'Uncertainty and the Welfare Economics of Medical Care' (1963), Nobel Prize winner Kenneth Arrow laid the foundations for applying economic theory in the analysis of health care (Wilson, 1999). Arrow argues that 'we may confidently assume that price and income do have some consequence for medical expenditures.' (Arrow, 1963, p. 950), and strives to define explicitly the specific features of health care market and distinguish it from the consumer goods market.

The years following these initial considerations on the costs and effects of health care system, including the issues of determining and controlling the prices of pharmaceuticals and regulating their distribution, saw the development of pharmacoeconomics. It emerged as the result of disbalance between unlimited needs (and growing costs) on the one hand and limited resources on the other. The main task of pharmacoeconomics is to analyze the costs and benefits (outcomes) of alternative therapies.

Basically, economic environment makes a powerful impact on the availability of pharmaceuticals, and sets limitations which significantly affect all participants on the pharmaceutical market in terms of availability and access to alternative therapies. In essence, economic environment dictates the prescriber's therapy of choice; controversies over drug availability and disputes over intellectual property on the global market, among others, result from the fact that economic environment and circumstances in developing countries require assigning minimum prices to life saving and/or extending therapies. According to Arrow (1963, p. 947), 'the doctrine that society will seek to achieve optimality by non market means if it cannot achieve them in market is not novel', nor is it less relevant almost half a century later. The issue of health care and its availability within national borders, but also as an important issue for mankind, will remain controversial from the aspect of the confrontation between the purpose and logic of health care, and the fact that it has a price (or at least costs). [10,18,20].

### Technological Environment

Kotler regards technology as 'one of most dramatic forces shaping people's lives.' (1997, p. 158), and nowhere is the illustration of the positive effects of technological advances so important as in the extension and improvement of quality of human life through advances in medicine and pharmacy. Considering one of the primary objections to marketing – that it creates new needs – the defense of marketing is often based on the argument that needs are as old as humanity, and progress makes it possible to meet the primeval needs in a new, more efficient and effective way.

'Technology leads to new goods and services, it also improves existing products, offers better customer service, and often reduces prices through new, cost-efficient production and distribution methods' (Boone, Kurtz, 2004, p. 77). Pharmaceutical industry is expected to provide new products, more efficient and effective in the struggle for life free from biological limitations; it is expected to provide higher service levels, lower prices and extended drug availability.

Pharmaceutical industry is a high-tech industry in the real sense of the word, which is reflected both in the complex R&D of new products and in high standards of pharmaceutical production and trade. If we were to define the leading market (Gillespie, et al. 2004) of pharmaceutical products – understood as one primarily orientated to research and development – then it would definitely be the US market. If we were to define the key arm of pharmaceutical industry from the aspect of radical technological innovation, then it would certainly be biotechnology.

In view of the technologically (and capital-) intensive dimension of R&D process, the industry itself is polarized to innovating pharmaceutical companies (the so-called Big Pharma, or as Campbell (2005) terms them, total pharmaceutical companies) and generics producers. Technological advances seem to be the driving development force of pharmaceutical industry. The list of 20 companies with the highest investment in R&D includes as many as 7 pharmaceutical companies, investing the average of 13.3% of sales in R&D (Jaruzelski, Dehoff, 2007). The same investment rates are found in software and internet providers, while other industries invest much more modest share of their sales in R&D, such as computer and electronics industry with 7%, or automotive industry with a little less than 4%, while in consumer goods, R&D expenditure on average does not exceed 2% of company's sales. Development levels of the technological environment and availability of technology (as well as human resources capable of mobilizing technology so as to attain goals) define the capability to enter the highly competitive pharmaceutical market.

Not without reason, three largest pharmaceutical companies in the region of former Yugoslavia continue their business in the sphere of generic products which are free from the need to mobilize cutting-edge technology in R&D; their market position is defined as follower/imitator rather than leader/innovator strategy. The technological 'infrastructure' of R&D in pharmaceutical industry requires developed institutions involved in basic research – producers' laboratories in their own R&D field, national institutions involved in primary research, universities etc., and then the ability to translate the basic results to the level of applied solutions and new product commercialization.

The impact of technological environment on the industry is visible in the process of developing a new drug, where sophisticated computer programs enable researchers to direct the active substance to the desired biological target more efficiently. It is currently possible to test the action of a larger number of active substances over the same time span, while decoding the human genome leads to individually tailored therapies (Campbell, 2005).

Available technical advances change the conditions of information-gathering, education and improved drug availability from the aspect of patients i.e. end users. Mobile phone services – SMS messages – are used in many developed countries for making appointments or reminding to go to a checkup, as reminders to take therapy, or for providing additional information to users (Pesse, Erat, Erat, 2006). [21,22].

#### **Better Customer Services through Technology – , Apotekarska Ustanova Novi Sad, (NS Pharmacy) [8]**

Apotekarska Ustanova Novi Sad - NS Pharmacy introduced a new service to their clients – possibility to receive desired information by mobile operator short messages service (SMS) – SMS Consultancy. Management of Apoteka Novi Sad with this service enabled their customers to receive needed information 24h a day, about working hours of different pharmacies, different actions, e.g. promotional activities organized by pharmacy itself or in partnership with pharmaceutical companies in prevention and education of patients, information about home and travel medicine cabinet, and also possibility to ask specific questions to pharmacist or schedule an appointment in some of branches of pharmacy around town. A similar service is also available on-line. This is an example how technological advances in communications are used for advancement of communication between pharmacy, as a place of distribution of drugs, pharmacist in role of prescriber and adviser in prevention and treatment of various health problems and patient/consumer. The same necessity for communication was needed in 1780, when the first civic pharmacy was opened in Novi Sad. Mobile phone operators brought new way of satisfying an existing need. A very important issue is that of product safety, which acquires a special weight in pharmaceuticals.

Modern products are extremely technologically complex (Kotler, Armstrong, 2001, p. 107): unlike traditional natural remedies, modern drugs both from the spheres of small and large molecules require rigorous evidence of safety and efficiency. These requirements extend the time required for launching new substances on the market, escalate R&D costs, and leave innovating Pharmaceutical companies with shorter exclusivity periods, in which they can recover their investment. [3,8].



### Natural Environment

Marketers in pharmaceutical industry are not exempt from paying due consideration to sustainable development, faced with concerns bothering all industries, as well as humanity as a whole: lack of raw materials, growing energy prices, growing environmental pollution and the fact that national regulations set increasingly strict environmental standards (Kotler, 1997, p. 158). Interaction between pharmaceutical industry and natural environment has complex implications both on the supply of and the demand for pharmaceutical products. In the case of biotechnology, the relationship between natural environment and man's ability (or open opportunity) to affect this environment raises controversial political, legal, ethical, moral, religious and other issues.

Viewed from the aspect of geographic and climatic conditions, natural environment is a vital element affecting the culture of living on a particular area, which undoubtedly affects mortality statistics. According to whose data, climatic and weather conditions make a direct and indirect impact on human lives; the health of the populations of a given geographic region is significantly conditioned by access to drinking water, adequate nutrition, adequate accommodation and social circumstances (www.who.int/media-centre/factsheets, accessed June 2008).

Extremely high air temperatures in Europe in the summer of 2008 caused 35,000 deaths more compared to the same period the previous year. Certain diseases regarded as directly dependent on climatic conditions – such as malaria, diarrhea, or malnutrition due to decreased protein intake – are the deadliest diseases of the underdeveloped part of the planet; in 2008, these took over 3.3 million lives, where Africa was affected most. High blood pressure, obesity, insufficient physical activities, high blood lipid levels, tobacco consumption and diabetes, combined with socio-economic status are direct risk factors for the incidence of heart disease and strokes, and a substantial part of risk factors result from the eating culture of particular geographic regions. The economic development of humanity and the natural environment seem to be pitted against one another, giving rise to a complex dilemma with no apparent.

Solution – whether to keep high economic growth levels or protect the environment from further degradation. With its direct impact on man's daily life, natural environment remains a significant factor affecting the structure of demand for medical care and appropriate therapies. Socio-economic circumstances will determine whether demand will be met by adequate supply. From the aspect of relationship between natural environment and pharmaceutical market, we can conclude that certain natural conditions are exclusively matched by certain diseases, or that natural conditions significantly affect their incidence. [11,15].

### Demographic Environment

Demography is referred to as the science of population. We have used the quantitative and structural changes in demographic parameters as one of the basic arguments confirming the potentials of pharmaceutical industry and the growing importance of pharmacy (and medicine) in providing the quality of human life. Demographic transition is the result of huge advances in medicine and pharmacy, but also represents one of the key factors affecting the courses of development of this industry, as well as formation factor of demand for pharmaceutical products. W. Osler's position that it is '... much more important to know what sort of patients has a disease than what sort of disease a person has' speaks in favor of the proposition that, among others, demographic parameters can serve as a significant guideline in determining and forecasting the demand for particular types of therapy (and particular forms of health care).

Morbidity and death rate statistics provide explicit evidence of diseases, the causes of death, and vital statistics affecting the incidence of disease in particular patient categories, i.e. by age group, gender, marital status, etc. Research has shown that women use more drugs than men, and married people tend to adhere to therapy more than singles (Smith., *et al.* 2002). The same source lists children and the elderly as the most prominent consumers of pharmaceuticals.

The survey 'Attitudes Towards Health and Pharmaceuticals US', (Mintel, January 2005) explicitly lists demographic factors as those affecting the consumption of pharmaceuticals such as the growth in the population aged 65+; the fact that after the age of 45 population structure shifts significantly in favor of females; that 100 women in their late 60s are matched by only 60 men; and that education levels are a significant factor in terms of visits to doctors, use of pharmaceuticals, patient compliance and understanding complex health problems. Analyzing analgesics in the USA ('OTC Analgesics US', Mintel, May 2005) on a sample of nearly 20,000 respondents, Mintel

concludes that the rise in age leads to a drop in the share of consumers/patients using OTC analgesics against headaches and migraine; but a sharp rise in the use of these drugs as therapy of rheumatism and arthritis, as well as the use of analgesics for prevention and treatment of heart conditions and vascular diseases.

The influence of the age variable on the frequency of use of OTC analgesics. Certain diseases affect exclusively male population while others are characteristic of women; the incidence of diseases according to gender criterion is also different. It is enough to analyze the vital statistics of the Institute for Public Health of the Republic of Serbia and view the incidence of disease and causes of death across various age groups and gender. Smith, *et al.* (2002) highlight the human medical condition as one of the key and specific marketing environment factors.

According to these authors, the analysis of this factor makes it clear that it, basically, speaks of the morbidity and mortality statistics, which belong to demographic statistics. Not diminishing the significance of this factor, we regard it as unnecessary to separate it explicitly outside the total body of demographic factors, affecting the formation of demand for pharmaceuticals in a complex and synergetic manner. Pharmaceutical industry, by nature, shows a major interest in demographic trends, as demographic changes themselves will be a changing factor in the structure of demand for its products. Pharmaceutical industry functions in a complex and dynamic environment.

Analytic approach serves the purpose of explaining individual constituents, but one must bear in mind that their action is manifested as complex and synergetic. Furthermore, environment is characterized by change, so that marketers' task is to monitor the environment permanently, as in the case of pharmaceutical products the main social objective (or social benefit) lies in the '...efficient and effective matching of needs and wants.' (Smith, *et al.* 2002, p. 32). A characteristic response in understanding the complex environment includes the model of the networked environment of pharmaceutical products.

The concept of networked environment, or networked healthcare, is close to the concept of networked markets. Mutual dependence of economic subjects in their decision making and result optimization was highlighted by the famous Nobel Prize winner J. Nash in his equilibrium theory, while Chakravorti (2004) sees networked markets as an opportunity for rapid dissemination of information, ideas and innovations. Some authors in the field of pharmaceutical marketing deem that understanding and approaching the marketing environment of pharmaceutical industry as a networked environment may bring new quality into the understanding and accomplishment of the marketing mission on this market. [13,15,17].

## Conclusion

### Final Consumer, User, Client and/or Patient

The basic task of marketing is to understand the consumer. The consumer of pharmaceutical products can also be referred to as the patient. The universal sense of this notion is questioned if we take into account the fact that a patient (from Lat. *Patiens*) is 'a person who bears, suffers (an illness)', which does not necessarily refer to all categories of pharmaceutical product users, e.g. prevention products. Traditionally, pharmaceutical manufacturers' marketing effort was aimed at prescribers, as the decision to use or choose prescription drugs is at their discretion only.

A large number of authors in the recent years have highlighted the growing role of patients in the healthcare system, including their rising influence on the choice of pharmaceutical products (Thornton, 1999; David, 2001; Andersen, Witz, 2002; Walker 2003; Campbell, 2005; Smith, Winston, Clark, 2006; Rao, 2008). Markets are comprised of consumers, and to define a market means to recognize consumers.

In the case of pharmaceutical industry, the number of potential consumers equals the total population, But the total population can be divided into multiple segments, where numerous factors, such as demographic (including the nature of disease), sociological, psychological, geographic, economic (including welfare system or available medical insurance) can serve for better mapping of the

target market at the level of individual drug classes and/or specific medicines. As our analysis of the environment has covered (or at least tried to cover) some of the above mentioned factors and their impact on the 41 parallel – substitute; a drug with the same action, pharmaceutical market, the following segment is devoted to the 'buyer's black box'.

One of the first models used in micro-economics is that of Input-Output, which considered economic factors on the input side and exhibited behavior on the output side, highlighting consumers' rationality, and ignoring mental processes and differences between individuals. In the mid/60s, the stimulus-organism-response model entered most marketing textbooks, placing the buyer's black box, which contains buyer's characteristics and the decision-making process, between the environmental influences and controlled marketing variables and the buyer's response (manifested market behavior).

A revised Jacoby's model will serve for opening certain issues related to the behavior of pharmaceutical product buyer. The author proposes the model in the form of Venn diagrams, aiming to overcome the linear character of currently used models, with the proposal that 'the phenomenon modeled is significantly non-linear and not necessarily logical, but rather psychological fluid, dynamic and recursive...' (Jacoby, 2002, p. 52). Marketers' ability to understand consumers on the pharmaceutical market is conditioned by understanding consumers' needs, primarily their motivation, as well as the factors affecting consumer behavior on this market.

Tars will influence numerous consumers' and/or patients' decisions, starting from attitudes to symptoms, seeking information and appropriate help, through patient compliance to validation of therapy outcomes. The interest of marketing in studying the specific characteristics of consumers is defined by marketing's task to create appropriate external stimuli under the control of pharmaceutical companies – more specifically the appropriate marketing mix, which is the result of accomplishing two goals:

1. Understanding why consumers on the market behave in a particular way when purchasing and using products; [3].
2. Discovering ways of creating marketing stimuli in such a way as to produce the desired response in consumers [8].

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