The Influence of Pharmaceutical Marketing on the Prescribing Behavior of Physicians in the United States and in the Netherlands
Abstract

Many studies investigating the influence of pharmaceutical marketing exist, where the main focus lies on direct to consumer advertising and direct to physician marketing. This paper presents an overview of findings in current research and in addition, provides a broader context by comparing the Netherlands and the United States and including two new dimensions; Culture and Market structure. A conceptual model is developed, that provides information about the direct effect of pharmaceutical marketing on the prescribing behavior of physicians, as well as the direct and moderating effects of Culture and Market structure. It appears that pharmaceutical marketing influences physician prescribing behavior in both a positive and negative way. This paper further concludes that the culture and market structure of both countries influence the extent to which pharmaceutical marketing has effect. Both countries need different marketing strategies to generate influence on physician prescribing behavior.
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1. Introduction

1.1 Background
In the media and in medical sources the desirability of specific pharmaceutical marketing activities is a highly debated topic. On average pharmaceutical companies spend 20% or more of their sales on marketing (De Laat, 2002). Most of these marketing activities are directed to physicians and include doctor visits, detailing, direct-mail, post-marketing research and conferences. “Opponents criticize these pharmaceutical marketing activities as wasteful and excessive and as potential contributors to the overuse, misuse and wrong prescription of drugs by physicians” (Kremer, Bijmolt, Leeﬂang, & Wieringa, 2008, p.234). “Supporters of pharmaceutical promotions claim that marketing expenditures give innovative pharmaceutical manufacturers a fair chance to recover high R&D expenditures and, moreover, marketing may serve as a communication channel to educate physicians and expose consumers to information that may improve their health outcomes and medical options.” (Kremer, Bijmolt, Leeﬂang, & Wieringa, 2008, p.236). From these two perspectives it can be concluded that in current research a contradictory view exists regarding the influence of pharmaceutical marketing on physicians prescribing behavior. Research already done is largely based on data of the United States, which has as consequence that in The United States much more literature and research is available than in the Netherlands. Although the pharmaceutical industry has an international nature, prescription pharmaceutical markets have a strong national character. This can be explained by cultural differences between countries that influence demand. In addition, the structure of the pharmaceutical market differs from country to country. There are international differences in the regulation of the industry and of health care in general (De Laat, 2002). There is little research that documents the exact roles of culture and market structure on the effect that pharmaceutical marketing has on the prescribing behavior of physicians. This research compares information in research already done and will provide new insights into the different influences, structures, and instruments used for pharmaceutical marketing and whether these differences prevail in one country versus the other. Research in this thesis will contribute to an increase in knowledge for understanding pharmaceutical marketing in the Netherlands. Furthermore, it will provide insights into marketing effectiveness for managers in the pharmaceutical industry.

1.2 Problem statement
To what extent is there a difference in the influence of Pharmaceutical Marketing on the prescribing behavior of physicians in The United States compared to The Netherlands?
1.3 Conceptual model

1.4 Research questions

In order to define the relationships of the relevant variables, to provide conclusions and to answer the central problem statement in this research, the following questions are vastly relevant.

1. What is physician prescribing behavior and what is pharmaceutical marketing?
2. What is the influence of pharmaceutical marketing on physician prescribing behavior?
3. What is the definition of culture in the United States and in the Netherlands?
4. What is the structure of the pharmaceutical market in the United States and in the Netherlands?
5. What influences do culture and market structure in the United States and The Netherlands have on physician prescribing behavior and on the relationship between pharmaceutical marketing and physician prescribing behavior?
1.5 Academic relevance

From an academic perspective this literature review is relevant in providing a more holistic insight in the field of pharmaceutical marketing and its possible effects. In current research controversy exists about the influence of pharmaceutical marketing on physician prescribing behavior. Some studies suggest positive effects, whereas other studies suggest negative effects (Kremer, Bijmolt, Leeflang, & Wieringa, 2008). Additionally, in the research already done in the field a comparison between The United States and The Netherlands has not yet been made. Relatively little information and data is to be found on pharmaceutical marketing in The Netherlands. In this research the contradictory findings will be compared and analyzed and will provide a deeper understanding in the field of pharmaceutical marketing. Furthermore, the content and conclusions provided in this research can lead direction for future research.

1.6 Managerial relevance

From a managerial perspective, conclusions of this research can be used for further analysis regarding the influence of pharmaceutical marketing on physician prescribing behavior. International pharmaceutical companies that deal with the challenges of expanding to The United States and The Netherlands will need to know how to cope with their marketing strategies. The differences between countries are very relevant in choosing the pharmaceutical marketing strategy for the company. The benefits of a good marketing strategy can have major influences on profits and market share. This is well known to be very important for the existence of a company. In addition, conclusions about the effects of pharmaceutical marketing can have a significant impact on public policy makers’ concerning welfare effects and can eventually facilitate appropriate regulations. (De Laat, 2002) (Windmeijer, de Laat, Douven, & Mot, 2005)
2. What is physician prescribing behavior and what is pharmaceutical marketing?

2.1 The definition of physician prescribing behavior
Physician prescribing behavior is a very broad concept including various dimensions. In this research the focus will be on adoption. According to the American Marketing Association (2010) adoption can be explained as a process that individuals and firms, in this specific case, physicians, go through when accepting new products. The different stages in the process of adoption include; new product awareness, gathering information, developing positive attitudes towards the product, testing it in some direct or indirect way, finding satisfaction in the trial and adopting the product into a standing usage or repurchase pattern. The process of adoption often is also referred to as the process of diffusion, the process by which new ideas and products become accepted by a society. According to a study by Rogers (1995) this process is a social process, where social contagion initiates adoption. That is, a physician’s decision to adopt a drug is influenced by their exposure to other physicians’ attitude, knowledge, or behavior (Van den Bulte & Lilien, 2001).

2.2 The definition of pharmaceutical marketing
In order to answer the question what is pharmaceutical marketing a clear definition of the concept is highly relevant. In this research the American definition of pharmaceutical marketing is relied on. According to the Prescription Drug Marketing Act (PDMA), a law of the United States federal government, “pharmaceutical marketing is the business of advertising or otherwise promoting the sale of pharmaceuticals or drugs” (U.S. Department of Health and Human Services, 2006).

2.2.1 Goals
According to Smith (1991) the main goal of pharmaceutical marketing is pharmaceutical care, care that is required for patients and consumers and declares safe and rational drug usage (Issets, Schondelmeyer, Heaton, Wadd, Hardie, & Artz, 2006). This involves providing solutions for diseases and sickness in order to improve overall health and public’s knowledge of health (Sheehan, 2007). Moreover, marketing practices are also aimed at increasing sales and profits for manufacturers and wholesalers (Rubin, 2004). Via marketing efforts directed at consumers, the pharmaceutical industry aims at expanding the market and influencing market share (Bala & Bhardwaj, 2010).
Other key goals of marketing are the exchange of information, and matching as closely as possible the marketing mix of their companies to the needs of their customers/patients (Smith, 1991). The exchange function of pharmaceutical marketing entails the exchange of information, products, use right and payment at every stage of the supply chain as well as upwards (towards the manufacturer/wholesaler) as downwards (towards the customer) (Smith, 1991). The exchange of information is part of a larger goal of pharmaceutical marketing, communication. Through marketing efforts it becomes possible for pharmaceutical drug manufacturers and drug wholesalers to communicate new developments in pharmaceuticals and drugs, and to promote their products to physicians and consumers or patients. The content of the information notifies physicians and consumers about the efficacy and the characteristics of a drug, which eliminates any uncertainty and initiates the process of diffusion and early adoption of the new drug (Manchanda, Phil, & Honka, 2005). With promotion through advertising one can increase brand awareness (Yoo, Donthu, & Lee, 2000), this way drug manufacturers can be competitive with other pharmaceutical manufacturers in the pharmaceutical industry. Whether the pharmaceutical promotional expenditures are effective and accomplish its goals depends on a wide range of variables and appears to be heterogeneous (Singh & Smith, 2005).

2.2.2 Instruments

In the Netherlands as well as in the United States a large variety of marketing instruments are used. Two types of promotional instruments can be distinguished. Promotional instruments aimed at physicians (DTP) and promotional instruments aimed at patients or consumers (DTC) (Kremer, Bijnol, Leeftlang, & Wieringa, 2008). DTC allows drug manufacturers to advertise and promote their drugs directly to the patients or consumers. In the United States this type of advertising is allowed in the Netherlands direct-to-consumer-advertising is prohibited (Mansfield, 2005). Advertising, e-mail, samples, gifts and detailing including doctor visits and conferences made by pharmaceutical representatives; these are examples of common (DTP) instruments that are used by the pharmaceutical industry to market their products. More specific instruments that are used by the drug sector is the implementation of post-marketing- research, in-service-training for physicians and the sponsoring of research (De Laat, 2002). Post-marketing-research implies that companies pay doctors for participating in marketing research. Post-marketing research is considered as scientific research. However, a large part of this research does not serve for scientific purposes and is mainly focused on seizing market share. This market share is gained by rewarding physicians for prescribing the desirable drug. In-service- training for physicians is obligatory in The Netherlands. More than a half of the extra training
is organized by drug manufacturers and therefore often used as instrument for the marketing of their products (De Laat, 2002). An instrument that is used to inform both physicians and patients via communication channels is diffusion modeling (Majahan, Muller, & Bass, 1990). Diffusion modeling is used to pass on information to society about innovations in drugs.

It is useful for pharmaceutical researchers and practitioners to adapt various promotional instruments, this because it may help marketing managers to improve the allocation of their marketing budgets over the different instruments, and by this means reduce the waste in marketing investments (Leeflang & Wieringa, 2009).

2.4 Conclusion

Physician prescribing behavior is a concept that can be broadly defined. In this research the focus is on adoption, a process which, in this particular case, physicians go through when accepting new products. Adoption is often also referred to as the process of diffusion, a process by which new ideas and products become accepted in a society and is driven by social contagion. In order to create awareness for new products the pharmaceutical industry applies the concept of pharmaceutical marketing.

Pharmaceutical marketing uses various instruments, in which two specific types of promotional instruments can be distinguished. Promotional instruments aimed at physicians (DTP) and promotional instruments aimed at patients or consumers (DTC) (Kremer, Bijmolt, Leeflang, & Wieringa, 2008). The instruments are used by the pharmaceutical industry to market their products, to inform physicians and patients about innovations, and to pursue intended goals like; pharmaceutical care toward consumers, the promotion of the products, the exchange of information, increasing sales and profits, create product awareness and initiate the process of diffusion with the goal of early adoption by physicians.
3. What is the influence of pharmaceutical marketing on physician prescribing behavior?

Beliefs about marketing efforts in the pharmaceutical industry are extremely at odds. However, an undeniable fact is that marketing efforts do have a significant impact on physicians decision to adopt (Van den Bulte & Lilien, 2001) (Narayanan, Manchanda, & Chintagunta, 2005) and can initiate the process of diffusion (Hahn, Park, Krishnamurthi, & Zoltners, 1994). This chapter considers informative and persuasive effects and elaborates on the effects of Direct to Physician marketing and Direct to Consumer marketing. The effects of Direct to Consumer marketing are extremely relevant for this research, because this practice is only allowed in the United States and therefore one of the major distinguishing factors between the Netherlands and the United States.

3.1 Informative and Persuasive effects

In the early stages of the product life cycle marketing functions more as an informative instrument, later this function becomes more persuasive (Osinga, Leeftlang, & Wieringa, 2010) (Gonül, Carter, Petrova, & Srinivasan, 2001). The informative effect implies that marketing serves as a communication channel, which educates physicians and exposes consumers to information that may improve their health outcomes and medical options. (Rubin, 2003) (Rosenthal, Berndt, Donohue, Frank, & Epstein, 2002). The persuasive effect eventually will lead to overuse, misuse and wrong prescription of drugs (Chetley, 1995). It will put extra pressure on physicians to prescribe onerous expensive drugs even when a cheaper generic drug would be appropriate (Windmeijer, de Laat, Douven, & Mot, 2005). These findings are in accordance with the findings in former research by Caves & Hurwitz (1988) and Rizzo (1999).

3.2 The effects of Direct-to-Physician marketing

Physician prescription behavior is affected by pharmaceutical marketing in a significant, positive way (Manchanda, Phil, & Honka, 2005) (Nair, Manchanda, & Bhatia, 2009). Marketing efforts create awareness among physicians about new drugs and their specifics (Gonül, Carter, Petrova, & Srinivasan, 2001). Due to the promotional activities directed at physicians, physicians learn and experience the effectiveness of the new drugs more rapidly when exposed to marketing communication (Narayanan, Manchanda, & Chintagunta, 2005).
Pharmaceutical marketing can have direct effects and indirect effects. Direct effects, also called reminder effects, are effects that directly influence physician adoption of drugs, here goodwill, achieved by constant interaction between pharmaceutical representatives and physicians, influences the preferences for certain drugs and products (Narayanan, Manchanda, & Chintagunta, 2005). The direct effects positively influence physicians’ probability to prescribe (Manchanda, Phil, & Honka, 2005). Indirect effects can be explained as effects that indirectly affect physician adoption. Important is the perceived product quality, marketing communication makes it possible for consumers to change attitudes and reduce uncertainty about the exact quality of a new drug through a process of learning (Narayanan, Manchanda, & Chintagunta, 2005).

Another important influence that direct to physician marketing practices on the adoption of new drugs is social contagion. That is, physicians are influenced by exposure to other physicians’ attitudes, knowledge, or behavior when deciding to adopt a drug (Van den Bulte & Lilien, 2001). When a physician makes a decision to adopt he/she influences other physicians near him/her (Berndt, Pindyck, & Azoulay, 2003).

A study by Osinga, Leeflang, & Wieringa (2010) suggests that marketing effects are largest in size in the period right after the introduction of a brand or a new drug and that the marketing efforts directed at physicians become less effective at a later stage in the product life cycle. This can be explained by the fact that most information is dispersed in the early stages in the product life cycle of a new drug (Manchanda, Phil, & Honka, 2005). In addition a study by Gonül, Carter, Petrova, & Srinivasan (2001) suggests that up to a certain point marketing communication directed at physicians positively affects the prescription probability of a drug, when passing that point excessive marketing efforts generate adverse effects.

### 3.3 The effect of Direct-to-Consumer marketing

With Direct-to-consumer advertising patients are provided with information about a (new) drug. Pharmaceutical companies try to persuade consumers/patients to discuss their specific brand when visiting their doctor, which indirectly makes physicians aware of the new brand (Bala & Bhardwaj, 2010). Studies suggest that physicians’ probability of adopting a drug is significantly affected by patient requests. For instance, a study by Herzenstein, Misra, & Posavac (2004), shows that a physician’s probability to prescribe or adopt a drug increases when a patient is positively influenced by DTCA, as the patient is likely to search for more information about the drug. However, a physicians’ reason not to describe a requested drug is also relevant in this context. For example, when a
physicians’ belief is that the drug is not right for the patient and another drug is more appropriate or when a less expensive drug is available on the market that has the same specifics (Aikin, Swasy, & Braman, 2004).

Despite of positive effects of Direct-to-consumer advertising, negative effects are as well relevant when assessing the effect on adoption and diffusion of drugs. Patient’s drug requests can put pressure on physicians (Pirisi, 1999), which can lead to the adoption and prescription of a drug, even though when the physician believes the drug is less appropriate and that there may be a comparable drug available that is less expensive. This will lead to overuse, misuse and wrong prescription of drugs through a persuasive effect (Chetley, 1995). A survey conducted by the American Association of Pharmaceutical Scientists (Pirisi, 1999) reported that 91% of the physicians felt pressure for complying with patient requests, only 9% felt no pressure, 6% felt a lot of pressure and, the remaining 85% felt some or little pressure.

3.4 Conclusion
In the early stages of the product life cycle marketing functions more as an informative instrument, later this function becomes more persuasive (Osinga, Leeflang, & Wieringa, 2010). This study also suggests that marketing effects are largest in size in the period right after the introduction of a brand or a new drug and that the marketing efforts directed at physicians become less effective at a later stage in the product life cycle.

According to several studies (Manchanda, Phil, & Honka, 2005) (Nair, Manchanda, & Bhatia, 2009) physician prescribing behavior is affected by pharmaceutical marketing directed at physicians in a significant, positive way. This is because marketing efforts make physicians aware of new drugs and their specifics. However, this positive effect occurs up to a certain point, after which the effects of marketing efforts generate adverse effects (Gonül, Carter, Petrova, & Srinivasan, 2001).

With direct-to-consumer marketing, physicians are indirectly made aware of new drugs through patient requests. A physician’s probability to adopt a drug is said to increase when a patient is positively influenced by DTCA (Herzenstein, Misra, & Posavac, 2004). A negative effect of Direct-to-consumer advertising is that patient requests can put additional pressure on physicians which stimulates overuse, misuse and wrong prescription of drugs (Pirisi, 1999).
4. What is the definition of culture?

The importance of national differences in culture is undeniable. The influences of cultural differences are large and complex. This is why it important for this research to define both the cultures of the Netherlands and the United states and reveal any differences. Various definitions of ‘culture’ exist; this is due to many theoretical approaches.

4.1 Defining culture through various theories

The concept of culture is very complex. This is because one specific definition of culture does not exist. According to Williams (1953) an early pioneer in the field of cultural studies, culture can be defined in two ways: “as a whole way of life” and “as a special process of discovery and creative effort” and has two aspects: the known meanings and directions and the new observations and meanings (Hall, 1980). A more recent definition of culture is the one of Richerson and Boyd (2005), they define culture as information that is competent of affecting individuals’ behavior through imitation, teaching and other forms of social learning from other members of their species. A study that emerged from the concept of culture is the study of Schwartz (2006). In his research he specified dimensions of national culture; embeddedness vs. autonomy, hierarchy vs. egalitarianism and mastery vs. harmony. Another theory defining culture is the theory of Hofstede (2001), which depicts five dimensions. Although the theory of Schwarz (2006) is argued to be a more refined model, the theory of Hofstede (2001) is the most applied model in explaining the various dimensions of culture (Koen, 2005). Hence, Hofstede’s five dimensions model is the theory that will be drawn on in this research.

4.2 Hofstede’s five dimensions that define culture

1. Power distance (PDI)
   “Power distance describes the extent to which the less powerful members of organizations expect and accept that power is distributed unequally” (Koen, 2005, p.12). In cultures with small power distance, people expect and accept power relations that are more democratic. People relate to one another more as equivalents regardless of formal positions. Cultures with a large power distance acknowledge the power of others based on their formal, hierarchical positions. Power distance does not measure a culture’s ‘real’ power distribution, but rather the way people perceive power differences.

2. Uncertainty avoidance (UAI)
   UAI describes the extent to which the members of a culture feel threatened by uncertain or unknown situations. In cultures with strong uncertainty avoidance, people prefer explicit rules and formally
structured activities. In cultures with weak uncertainty avoidance, people prefer implicit guidelines and informal activities.

3. Individualism vs. collectivism (IDV)
   Individualism implies that the ties between individuals are loose, with everyone being expected to look after him- or herself and his or her immediate family only. Collectivism entails that people from birth onwards are integrated into strong, cohesive groups, which throughout people’s lives continue to protect them in exchange for unquestioning loyalty. Cultures in which individualism dominates, people are expected to develop their individual personalities and to choose their own relationships. In collectivist cultures, people are seen and act as a group member.

4. Masculinity vs. femininity (MAS)
   This dimension depicts whether social gender roles are clearly distinct or whether they overlap. In ‘masculine cultures’ people value competitiveness, assertiveness, ambition and material success. In ‘feminine’ cultures people value relationships and quality of life (Rong & Allen, 2009).

5. Long-term vs. short-term orientation (LTO)
   This dimension is related to the fostering of virtues oriented towards future rewards versus the fostering of virtues related to the past and the present. In long-term oriented societies, people value actions and attitudes that affect the future, especially perseverance and thrift. Thrift means that in the Netherlands the economy can be considered as relatively careful with finances and the environment (Hofstede’s Asian cultural factors, 1998). Perseverance stands for people pursuing their goals in order to reach a desired end position. In societies that emphasize short-term orientation, people value actions and attitudes that are affected by the past or the present. Here respect for tradition, preservation of ‘face’, and fulfilling social obligations are primarily valued actions (Koen, 2005).

In the next paragraph the Hofstede dimensions will be applied to the Netherlands and the United States. In figure 1, a comparison between the Netherlands and the United States is portrayed.
4.3 The Hofstede dimensions applied and compared

Although the Netherlands and the United States both are characterized as western cultures, there are some distinct differences that can be observed between the two countries and their cultural dimensions. The dimension that immediately stands out is Masculinity (MAS). In the United States Masculinity has a level of 62 (Hofstede's Asian cultural factors, 1998). This is a relatively high score and indicates that social gender roles are clearly distinct. This is in contrast to the Netherlands, where the dimension has a value of 14. A somewhat low index that alludes for an overlap of social gender roles.

More moderate differences between the dimensions of culture in the two countries are Individualism (IDV) and Long-term orientation. In both countries Individualism reaches the highest value of all dimensions. In the Netherlands with a score of 80 (Hofstede, 2001) and in the United States with an even higher score of 91. The high scores are indicative for a society with more individualistic attitudes and relatively loose bonds with others. The American culture can be considered to be even more self-reliant than the Dutch culture. In the American society people value actions and attitudes that are affected by the past and the present, in particular respect for tradition, preservation of ‘face’ and fulfillment of social obligations (Koen, 2005).

Long-term orientation differs with a value of 15 between the United States and the Netherlands. In the Netherlands this dimension has a value of 44 (Hofstede, 2001) and in the United States a score of 29 (Hofstede, 2001). In the United States this value represents the lowest value within the Hofstede dimensions. The American culture can therefore be considered as more short-term oriented in which people value actions and attitudes that are affected by the past and the present. In the Dutch culture the
focus lies somewhat more on long-term orientation, which means that in the Netherlands people value actions and attitudes that affect the future (Koen, 2005).

The Uncertainty Avoidance dimension of Hofstede in the Netherlands has a value of 53. Compared to the world average of 64 this is relatively high. This denotes that in the Dutch culture people tend to minimize the level of uncertainty by enacting rules, laws, policies and regulations. The Uncertainty Avoidance (UAI) dimension and the Power Distance (PDI) dimension do not include significant differences between the Netherlands and the United States.

4.4 Conclusion

Even though both the United States and the Netherlands are defined as Western Cultures some important differences on the cultural dimensions of the theory of Hofstede occurred. The major difference can be identified in the Masculinity dimension (MAS). This indicates two things. First, masculinity is the dimension that is valued as most important in the American culture. More aimed at the content of the dimension this means that social gender roles in the American culture are clearly distinct and that competitiveness, assertiveness, ambition and material success are highly valued. Adversely, in the Netherlands a more feminine culture dominates.

The American culture can be further defined as a highly individualistic, short-term oriented culture with a mixture of explicit and implicit rules and guidelines, and a moderate tolerance level, whereas, the Dutch culture can be further described as an individualistic, long-term oriented culture. In slight contradiction to the United States, the Dutch culture values actions and attitudes that affect the future, this includes that people pursue their goals in order to reach a desired end position and an economy that can be characterized as relatively careful with finances and the environment (Hofstede's Asian cultural factors, 1998).
5. What is the structure of the pharmaceutical market?

Important for defining the pharmaceutical market is the structure of the industry. Due to the scope of the thesis it is not possible to provide a survey of all factors that define the structure of the pharmaceutical market, therefore the focus will be on the most important factors. Factors that moreover, will illustrate the most important differences between the United States and the Netherlands.

5.1 Defining the Pharmaceutical market

The pharmaceutical market involves many markets, products, processes and intermediaries and is severely regulated. This ensures that the pharmaceutical and healthcare industry is tremendously complex (Supply Chain in the Pharmaceutical Industry, 2010). Important players in the pharmaceutical market are; pharmaceutical firms, pharmaceutical manufacturers, drug wholesalers, physicians, patients, the government, insurance companies and pharmacists.

The pharmaceutical market differs from other markets in three respects (Kremer, Bijmolt, Leeﬂang, & Wieringa, 2008). First, the pharmaceutical industry is characterized by a provider-patient structure, in which the physician plays a significant role (Stremersch & Van Dyck, 2008). Here, the physician is the decision maker, whereas the patient utilizes the drug and pays for the drug (Gonül, Carter, Petrova, & Srinivasan, 2001). A second characteristic of the pharmaceutical industry is that a large percentage of the industries’ revenues are spent on marketing (De Laat, 2002) (Gagnon & Lexchin, 2008). Third, in the pharmaceutical market new product development, life cycle management and marketing management are highly important facets, here for specialized knowledge on marketing is required (Stremersch & Van Dyck, 2008)

5.2 Health Insurance

In the United States health care insurance can be divided into Private and Governmental insurance (DeNavas - Walt, Proctor, & Smith, 2009). Private health insurance implies insurance provided via an employer or union or insurance purchased by an individual from a private company. Governmental health insurance entails federal programs such as Medicare and Medicaid (DeNavas - Walt, Proctor, & Smith, 2009). The main provider of health insurance in the United States is the private sector. An interesting fact is that the United States has the most expensive healthcare system in the world and insurance costs are high (Iglehart, 1999). This has a consequence that many people in the U.S. are uninsured. The healthcare system is expensive due to high administrative costs that originate from
private insurances and increasing costs for medical technology and prescription drugs (The U.S. health care system : Best in the world, or just the most expensive?, 2001). Currently a new insurance system has been introduced by the President of the United States to lower health care cost and to assure health coverage for all people in the country (Health care, 2010), however, this system is not yet implemented.

In the Netherlands health care is provided by private health suppliers, the government is only responsible for the provision and the accessibility and quality of healthcare. Everybody who lives or has a job in the Netherlands is legally obliged to purchase basic health insurance from a Dutch insurance company (Zorgverzekering, 2010). Basic health insurance covers costs for medical care, for example, doctor visits and hospital stay. A person can decide for him-/herself to purchase additional insurance. The insurance premium and restitution differ per insurance company. Despite of the fact that basic health insurance is obliged in the Netherlands, it counts more than 150.000 people who are uninsured (Onverzekerden, 2010).

5.3 Pharmacist (power)

Pharmacist power in this research is referred to as the power of a pharmacist to offer customers a different, comparable drug than the physician has prescribed. Over the past few years the role of the pharmacist has changed from a passive dispenser to an active participant in therapeutic decision-making (Nissen, 2009). As a consequence pharmacists share co-responsibility for the results of a treatment (Boysen, 2004). In the Netherlands a pharmacist has the power to substitute a prescribed drug for a less expensive, similar drug or a generic (Merkloos medicijn is goed én goedkoper, 2010). The right of the pharmacist to substitute is based on agreements between physicians, pharmacists and health insurance companies and is allowed, because it saves costs. In the Netherlands a pharmacist will often suggest a generic. In this, the most important task for the pharmacist is to provide customers with a drug or generic that is a safe and appropriate substitute (Beach, 2009). When a physician explicitly asks for a certain brand and drug, the pharmacist is obliged to provide that brand and drug and is not allowed to substitute the brand and drug for a less expensive, similar drug or generic. In the United States the FDA also allows pharmacists to substitute an expensive prescribed drug, for an equivalent, less expensive drug or generic that is approved as effective and safe as the prescribed drug (Vivian, 2008). In the United States pharmacists are given significant responsibility. Though, the power of pharmacists is heavily regulated by both federal and state laws (Vivian, 2008).
5.4 DTCA

DTCA is a marketing tool aimed at consumers. The main goal of DTCA is to enhance wellbeing, however often DTCA is directly aimed at gaining market share and increasing profits (Hollon, 1999). In the United States the use of this marketing tool is allowed and in the Netherlands the practice of Direct-to-Consumer advertising is forbidden. In the Netherlands only providing information directly to consumer is allowed (Fabius, Cheung, & Rijcken, 2004). The reason why DTCA is forbidden in the Netherlands is because there is evidence that it potentially alters the patient-doctor relationship and generates demand without improving the treatment, which is due to pressure that patient requests can perform on physicians prescribing behavior (Gilbody, Wilson, & Watt, 2005). Furthermore, it is argued that the pharmaceutical industry via Direct-to-Consumer advertising is unlikely to provide strict and unbiased information (Morgan, Mintzes, & Barer, 2003). Nevertheless, for the United States Direct-to-Consumer advertising brings forward increases in sales, since is creates consumer demand, but it also increases pressure on physicians and increases in costs for the health system (The U.S. health care system : Best in the world, or just the most expensive?, 2001).

5.5 Physician Education

To become a physician four years of education in medical school is required in the United States, when completed this education physicians need to follow seven years of graduate medical education (Physician Education, Licensure, and Certification, 2010). The years of training depend on the specialty a physician wants to practice. In total 24 specialties can be practiced that are authorized by the American Board of Medical Specialties and many of these specialties have subspecialties. This leads to the fact that a large variety in qualities and specialties between physicians exists in the United States. Each physician is listed in the AMA physician select and licenses are arranged. It is possible for physicians to report their practice specialty via data collection methods (Physician Education, Licensure, and Certification, 2010). This provides transparency to people in the U.S about the specialty and education of a physician and provides information to which physician to turn for which treatment.

In the Netherlands students have to attend 6 years of medical school, in which two years of internship are included. When completing medical school, they can choose which specialty they want to pursue. In total the education takes 9 to 12 years, depending on the kind of specialty. In the Netherlands the KNMG defines and administers practice specialties of physicians (Opleiding en Registratie, 2010). However, information about quality and specialty of physicians is less transparent then in the United States.
5.6 Conclusion

Partly due to high administrative costs that originate from private insurances, and increasing costs for medical technology and prescription drugs, The United States has the most expensive health care system in the world (The U.S. health care system: Best in the world, or just the most expensive?, 2001). This leads to the fact that many people in the United States cannot afford health insurance. In the Netherlands, health care is provided by private health suppliers. Everybody who lives or has a job in the Netherlands is legally obliged to purchase basic health insurance. Though, health insurance is obliged, a significant number of people is still uninsured.

Concerning pharmacist power, pharmacists are allowed to substitute a prescribed drug in both countries. A difference is that in the United States the power of the pharmacists is more heavily regulated. One of the major distinguishing factors when defining both markets is that in the Netherlands direct-to-consumer advertising is not allowed. In the United States, DTCA is allowed, which brings forward increases in sales volume, yet it also leads to the negative effect that in the United States drugs are prescribed irrationally more often.

Physician education does not differ tremendously between the Netherlands and the United States, however in the United States the market is more transparent compared to the Netherlands.
6. What influences do culture and market structure in the United States and the Netherlands have on physician prescribing behavior and on the relationship between pharmaceutical marketing and physician prescribing behavior?

There is no research that documents the influence of both culture and market structure on the effect of pharmaceutical marketing on physician prescribing behavior. Hence, conclusions in this chapter will be based on findings and results in this research. This chapter describes the moderating and direct effects of both culture and market structure.

6.1 The moderating effect of culture

The moderating variable Culture can be defined as a variable that alters the strength of the relationship between pharmaceutical marketing and physician prescribing behavior/adoption in either a positive or a negative way.

The U.S can be characterized by a ‘masculine’ culture (Hofstede, 2001), a culture that values competitiveness, assertiveness, ambition and material success (Koen, 2005). This may imply that a more aggressive and competitive marketing strategy will be more effective and appreciated by physicians and patients and will produce more positive attitudes towards the new drug or brand, which in turn can lead to the adoption of the new drug. In addition, Americans are short-term oriented (Hofstede, 2001), for the pharmaceutical industry this means that they have to stay innovative and convince people about improvements in quality through marketing, because when one specific drug has not proved its efficacy in the past, it is less likely that the American physicians and patients will use the specific drug again and, instead will search for better alternatives. The pharmaceutical industry should prepare for this in order for their marketing strategy to be effective. On the other hand tradition is an important value, this could suggest that when a drug has proved is efficacy and effectiveness Americans will stick to this drug and they will be less interested in, and affected by promotional efforts for new, comparable drugs.

In contrast, the Dutch culture can be characterized as more ‘feminine’ (Hofstede, 2001), a culture where people value relationships and quality of life (Koen, 2005). Here, a less competitive and aggressive marketing strategy that stresses the true quality of a drug will have a more positive effect on the diffusion and the adoption of a new drug. Stressing the efficacy of drugs can be of major
importance for marketing to be effective, because physicians will evaluate a drug based on how it in the long-term will enhance patient’s well being. When experiencing positive results during beginning phase of the adoption process the probability that a physician will adopt and repurchase the product becomes significantly larger (Manchanda, Phil, & Honka, 2005). Lastly, the price of a drug will be considered as important in the Netherlands; a less expensive drug will be preferred, because the Dutch culture is characterized as careful with finances (Koen, 2005).

6.2 The direct effect of culture
In the ‘masculine’ culture of the United States success is important. This may suggest that physicians will adopt new drugs more easily, especially when a specific drug increases the health outcomes for their patients. Another assumption that directly can be derived from this cultural value is that, in order to increase patient’s health outcomes, physicians in the U.S will provide patients the best and most expensive drugs. However, adoption of these expensive drugs is more likely when a product has proved its effectiveness, if not physicians will stick to the old drug that is also effective.

In the Netherlands physicians will be less likely to adopt new drugs when an existing drug is still beneficial and effective. This can be explained by the cultural characteristic that people in the Netherlands will try to avoid uncertainties (Hofstede, 2001). Moreover, when two similar drugs are available on the market, physicians in the Netherlands are more likely to choose for the similar drug that is less expensive. From this, it can be concluded that a new drug that is more expensive, is less likely to be adopted by physicians in the Netherlands. In contrast, when a new drug innovation offers the same benefits, but is less expensive than an existing drug, a physician in the Netherlands will be more likely to adopt the drug.

6.3 The moderating effect of the market structure
The moderating variable Market structure can be defined as a variable that alters the strength of the relationship between pharmaceutical marketing and physician prescribing behavior/adoption in either a positive or negative way.

In the United States health insurance costs are very high (Iglehart, 1999). This may imply that physicians in the United States will be more sensitive for new drugs that have a higher quality and efficacy than existing drugs, and therefore are more likely to adopt these new drugs. Hereby, price will be less important. Adversely, in the Netherlands the health care system tries to save costs, so that all people can afford being insured. The saving of costs may imply that physicians will not be interested
in information provided by a pharmaceutical representative and less sensitive to the promotional efforts of a brand, simply because the existing drug is probably less expensive and effective as well.

In the United States the pharmaceutical industry is allowed to use DTCA as a marketing tool. This increases awareness of new drugs by patients. Via requests of the patients this also indirectly increases awareness among physicians and will lead to an increase in physicians probability to adopt. In the Netherlands direct to consumer advertising is not allowed, patients/consumers may only be provided directly with information (Fabius, Cheung, & Rijcken, 2004). This may result in less brand awareness of new drugs among patients. The choice of adoption as a result will be fully made by the physician and consumers choice for certain drugs will rely upon the choice of the physician.

6.4 The direct effect of the market structure
Marketing efforts by the pharmaceutical industry are only allowed to focus on physicians (DTCA is forbidden) and therefore, they must be aware of the fact that they have to provide the physician with as much valuable and unbiased information as possible and give the physician the time to experience and learn about the new drug and to develop positive attitudes. When experiencing and learning about the product, physicians are more likely to adopt the new drug (Narayanan, Manchanda, & Chintagunta, 2005. When a physician creates positive attitudes towards the new drug they also indirectly influence other physicians beliefs, attitudes and adoption behavior (social contagion) this will lead to a significant positive effect on diffusion and adoption.

Since the health care system in the United States is far more transparent than in the Netherlands, marketers in this country can more heavily rely on the effect called social contagion. Social contagion will have influence to a larger extent.

Another significant effect that occurs in the United States is the downside effect of DTCA is that due to patient requests physicians can be pressurized, which can lead to overuse, misuse en wrong prescription of drugs. However, it does increase sales volume and market share for the pharmaceutical industry. A marketing strategy that focuses on DTCA in the Netherlands is not possible this has the consequences that the relationship between pharmaceutical marketing and prescribing behavior is different, consumers experience less brand recognition and the consumer’s choice therefore relies more on the Physicians advice. This gives the physician more influence in the market and a marketing strategy for a pharmaceutical company should focus on influencing the physician. In comparison when DTCA is an issue such as in the Netherlands, marketing to the consumers also has effect.
Again a marketer must consider is the marketing effect of the high-end price segment. Particularly in the Netherlands expensive pharmaceuticals are not prescribed anyway, high insurance costs influence decisions. Physicians in the Netherlands are more likely to prescribe generics to patients; pharmacists play an important role in this.

6.5 Conclusion
Due to differences in culture pharmaceutical marketing in both countries can have different effects. In the United States more aggressive and competitive marketing will lead to the adoption of drugs by physicians, whereas in the Netherlands a less competitive and aggressive marketing strategy, that emphasizes patients well-being, will be more effective.

In the Netherlands the pharmaceutical industry has to take price into consideration when developing a marketing strategy, an expensive drug will be adopted less likely. When comparable, less expensive drugs or generics exist on the market these will often be preferred. Adversely, in the United States due to high insurance, price will play a less significant role, as physicians can afford and therefore, will provide the best drugs for their patients. In both countries stressing the efficacy of a drug when marketing, can be considered to be of major importance on influencing the adoption behavior of physicians. In the Netherlands it is even less likely that a physician will adopt a new drug when an existing drug is still beneficial and effective, this to avoid any uncertainties.

Because DTC marketing is allowed in the United States this ensures that misprescription and misuse of drugs is more likely to occur. Patients in the United States can have a significant influence in the adoption process, whereas in the Netherlands the choice for adoption is completely made by the physician.
7. Conclusions

7.1 Discussion
The aim of this research is to identify the effect that differences in culture and pharmaceutical markets between the Netherlands and the United States have on the adoption of drugs by physicians, and to what extent differences exist concerning the influence of pharmaceutical marketing. In current research there is little to no data about the influences of culture and market structure on physician prescribing behavior. This research provides these effects and offers managers in the pharmaceutical industry valuable information on how to most profitably and effectively make use of their marketing strategies. Findings in this research indicate that marketers should invest in promotional efforts right after the introduction of a new drug, since the effects of marketing are then largest at size. When marketing a drug focus should not only be on physicians and patients, but also on pharmacists, since they can influence which drugs are prescribed. The findings in this research further indicate that different promotional efforts and marketing strategies will be necessary in order for pharmaceutical marketing to be beneficial and generate largest effects in both countries. Pharmaceutical marketers in the Netherlands should not base their marketing strategies on strategies from the United States, since the Dutch culture and market structure is clearly distinct from the United States.

7.2. Conclusions
Pharmaceutical marketing uses various instruments, in which two specific types of promotional instruments can be distinguished. Promotional instruments aimed at physicians (DTP) and promotional instruments aimed at patients or consumers (DTC) (Kremer, Bijmolt, Leeflang, & Wieringa, 2008). The instruments are used by the pharmaceutical industry to market their products, to inform physicians and patients about innovations. In the early stages of the product life cycle marketing functions more as an informative instrument, later this function becomes more persuasive. The research provided in this paper suggests that marketing effects are largest in size in the period right after the introduction of the drug. Promotional efforts directed at physicians have a significant positive impact on the adoption of drugs by physicians up to a certain point, when passing that point excessive marketing efforts generate adverse effects. Positive effects are that by means of promotional activities physicians are made aware of new drugs and their specifics; that physicians learn and experience the effectiveness of drugs more quickly and, that it makes it possible for physicians and patients to change attitudes and reduce uncertainty about the drug. Negative effects especially refer to Direct–to-consumer marketing
and the persuasive function that marketing practices later in the process cycle. Direct-to-consumer advertising encourages patient requests for drugs by physicians; however these patient requests can pressurize physicians, which in turn stimulate overuse, misuse and wrong prescription of drugs. DTCA is only allowed in the United States and counts for a major distinction regarding the influence on the prescribing behavior of physicians. In the Netherlands DTCA is forbidden by the law, only directly providing consumers with information about drugs is allowed. This ensures that the choice of adopting a drug will be in left to the physician and that patient will largely rely on the physician’s choice and pharmaceutical marketing thus should focus purely on the physicians.

The culture of both countries is also clearly distinct, yet this paper only considers the most significant differences. The American culture can be described as a ‘masculine’ culture, which indicates that social gender roles are clearly separated and values like competiveness, assertiveness, ambition and material success are highly treasured. In addition, the culture can be defined as a highly individualistic, short-term oriented culture with a mixture of explicit and implicit rules and guidelines, and a moderate tolerance level. People in the United States are self-reliant and only take care of themselves and for immediate family. In the American society people value actions and attitudes that are affected by the past and the present, in particular respect for tradition, preservation of ‘face’ and fulfillment of social obligations (Koen, 2005). Adversely, in the Netherlands a more ‘feminine’ culture dominates. This somewhat low index alludes for an overlap of social gender roles and indicates that a low level of differentiation and discrimination exists between genders. It further can be defined as an individualistic, long-term oriented culture with a high score on uncertainty avoidance. This denotes that in the Dutch culture people tend to minimize the level of uncertainty by enacting rules, laws, policies and regulations. In slight contradiction to the United States, the Dutch culture values actions and attitudes that affect the future, this includes that people pursue their goals in order to reach a desired end position and an economy that can be characterized as relatively careful with finances and the environment.

Due to differences in culture pharmaceutical marketing in both countries has different effects. In the United States more aggressive and competitive marketing will probably increase the probability of adoption by physicians, whereas in the Netherlands a less competitive and aggressive marketing strategy, that emphasizes patients well-being, will be more effective.

When considering Market structure a clear distinction between the two countries occurs, when looking at DTCA, however this is not the only factor that depicts a difference between the Netherlands and the United States. The healthcare system of the United States in this research is characterized as the most
expensive in the world including high insurance costs. The costs to pay for insurance in the Netherlands can be partly decided by the consumer him-/herself, since there are many providers and they have the option to buy additional insurance.

In order for the pharmaceutical industry to optimally influence the adoption behavior of physicians the most important consideration that needs to be taken into consideration when developing a marketing strategy is price. In the United States price is less important, due to the high insurance costs physicians can afford the best drug for the patient. In the Netherlands an expensive drugs are not prescribed anyway and therefore will not be adopted.

At last pharmaceutical marketing leads to an increase in the probability of adoption, when in both countries marketing stresses the efficacy of a drug. Otherwise, for both cultural and structural reasons marketing efforts will have less to no effect.

7.3 Recommendations

For future research it may be valuable to consider the broader definition of physician prescribing behavior, this research only covers the process of adoption and diffusion. A broader definition of physician prescribing behavior would contribute to a broader understanding of the extent to which pharmaceutical marketing has influence and would improve managerial relevance.

Due to the scope of this research, only the most significant differences between the Netherlands and the United States are discussed. Other factors and there possible effects are not reflected in this research. For future research a more extensive view towards the roles of both culture and market structure will provide a deeper understanding about the effects and influences of the two variables on physician adoption behavior. Furthermore, this paper compares a large country; the United States, to a relatively small country; The Netherlands. To increase the managerial usefulness it would be beneficial for future research to take additional countries into consideration. Throughout this paper, several conclusions are based on intuition and data earlier provided in the paper. Future research is necessary to find empirical support for these conclusions.

7.4 Limitations

Several limitations of this research can be acknowledged. Firstly, this paper compares a relatively small country (the Netherlands) to one of the largest countries in the world (the United States). A more extensive view could have been provided if the United States was compared to Europe. However, the health care systems in Europe mutually depict too many differences. Second, Culture in this research is defined by the theory of Hofstede, since this theory is most applied;
however culture comprises many definitions and theories. This assures less generalization of results in this paper. Third, in this paper the old health care system of the United States is defined, this because of the fact that the new healthcare system, recently introduced by the President Obama is not yet implemented and therefore not much data is available. The last and most important limitation that can be acknowledged for this research is that little data is available on the influence of pharmaceutical marketing in the Netherlands, whereas in the United States many data is available. This makes it more difficult to make accurate comparisons and assures less generalization of the results and conclusions in this paper.
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