A SEGMENTATION STUDY OF PHYSICIANS' PERSONAL VALUES, DRUG PRESCRIPTION CRITERIA AND PREFERRED MARKETING COMMUNICATIONS ELEMENTS

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Abstract

The aim of this exploratory study was to elucidate the relationship of physicians' personal values with their drug prescription criteria (i.e. buying criteria) and preferred marketing communication elements. The survey involved a quantitative research instrument which was filled in by 68 physicians, comprising 38 general practitioners, and 30 specialists, though personal interviews. All, but the demographic measures were tapped by 5-point Likert scales. A series of exploratory and confirmatory factor analyses assessed unidimentionality and validity of research constructs. Standard cluster analysis generated three clusters of physicians, described as "careerists," "brand loyal," and "bohemians". The significant differences of the means among the three clusters, in respect to personal values, prescription criteria and preferred marketing communications elements, indicate that personal values may be regarded as a basis for the physicians' market segmentation. The findings may be useful for both marketing strategy planners and researchers examining buying behavior in this hybrid pharmaceutical market, which is in between industrial and consumer categories. Thus, a pharmaceutical marketing plan should be adaptive to the characteristics and criteria of each physician market segment. The study concludes with directions for further research.

Key words
Physicians' personal values, prescribed drugs, marketing communications elements

Introduction

Contemporary marketing scholars show an ever-growing interest in studying physician perceptions on direct-to-consumer communication, company-physician communication and detailer-physician communication, among others (Mukherji, 2004; Wieringa, Leeflang, Ruiz and Wittink, 2004). At the same time, given the rising competition and deregulation of pharmaceutical market worldwide, there has been explosive growth in pharmaceutical marketing costs. Indeed, according to the IMS World Review, 2004, pharmaceutical sales reached USD $466 billion in the global market, indicating an increase of 9% in constant values, compared to 2002 sales. Specifically in Greece, pharmaceutical sales of prescribed medicines (Prescribed Only Medicines-POMs) rose to €2.1 billion, in 2003. This amount accounts for 16.3% of total health care expenditure, which is quite close to the E.U. countries respective average of 17.3%. During the same year, advertisement expenditure of OTC (Over The Counter) pharmaceutical products, performed an increase of 36%, compared to 2002, reaching €16.4 million, accounting for 7% of total pharmaceutical sales. This is quite high, compared to the pharmaceutical Direct-to-Consumer (DTC) expenditures worldwide, which covers both OTC and POM drugs, accounting for 1.5% of pharmaceutical sales for 2005. Although that, in Greece, advertisement is allowed only for OTC drugs, however it may act as an indicator of increasing marketing expenditures for both OTC and POM drugs, in order to cope with enhanced competition, mainly due to the escalating power of generic products. Indeed, although that, the generic market accounts only for 9.8% of total pharmaceutical market, its average annual growth rate for the period 1996-2003 is estimated at 8.7%, which is approximately twofold of the 4.5 % average annual growth of the market as a whole.

Given the above, there is an increasing pressure, both in Greece and worldwide, for justifying marketing expenditures and measuring marketing efforts in the pharmaceutical industry. The marketing strategies employed in the pharmaceutical industry sharply contrast with those typi-

cally adopted in other markets. One of the primary reasons for this difference is that in the prescription drug market there is a distinct breach in the traditional buying decision process: The decision maker is the physician, who chooses among an array of drug alternatives, but it is the patient who takes the drug and ends up paying (either out of pocket or through health insurance coverage) for the choices made by the physician. In this vein, in the marketing of prescription drugs there is an important distinction from the traditional marketing practices studied so far. The marketing literature is replete with examples in which the chooser is not the user. Organizational buying, toy purchasing, and textbook buying provide other examples of situations in which the decision maker is necessarily different from the user (Kotler 2000).

A big part of marketing literature focuses on the influence of advertising costs on price elasticity and diffusion of new drugs, the impact of detailing (i.e. personal selling) and promotion efforts on physicians' prescription behaviour, the role of marketing mix interactions on pharmaceutical expenditures, the relationship of consumer characteristics with prescription drug advertising, just to mention a few of them (Gonul, Carter and Wind, 2000, Avlonitis & Panagopoulos, 2004; Mehta & Purvis, 2003; Liu 1995; Narayanan, Desiraju & Chintagunta, 2004).

However, although academics have had a long- standing interest in understanding the effectiveness of marketing activities, however, to the best of our knowledge, limited attention has been devoted to the study of the relationship of the physician's personal traits and prescription criteria with preference on marketing communications mix elements.

With this exploratory study we start filling this void. A better understanding of the relationship between a physician's personal values with her/his prescription choice criteria and her/his preferred pharmaceutical marketing tools, would improve the pharmaceutical companies' ability to better allocate marketing expenditures and make marketing efforts more cost efficient.

Specifically, the purposes of this study are:

a) To develop appropriate constructs for physicians' per-

sonal values, drug prescription criteria (i.e. buying criteria) and pharmaceutical marketing communications elements.

b) To examine the relationships among the aforementioned constructs.

c) To examine the potential match among the aforementioned measures, i.e. whether we may segment the physicians market on the basis of the aforementioned constructs.

1. Physicians' buying situation is hybrid, in between industrial and consumer categories.

In the pharmaceutical industry, POMs are considered to be organizational buying, whereas over-the-counter (OTC) drugs are categorized as consumer buying (Liu, 1995). For example, Mudabi (2002), synopsizing prior knowledge on the differences between industrial and consumer markets, postulates that a market may be categorized as industrial if it involves: a) emphasis on tangible product and augmented services in the purchase decision, b) customized products, c) personal relationships between buyer and salesperson, d) highly complex products, e) sophisticated buyers, f) reliance on personal selling, f) branding at a corporate level, and, g) more customer emphasis on risk-reduction; less customer emphasis on self-expressive benefits of brands. It may be easily derived that the prescription drug market satisfies all the aforementioned criteria. Notwithstanding, a few more researchers attribute to industrial marketing the following characteristics: a) the negotiated pricing b) the derived demand and c) multi-member organizational buying center. As evident, the above characteristics may not be attributed to the physicians buying situation. For example, a doctor: a) may not negotiate the price of the drug on behalf of his/her patient; the patient scarcely knows what kind of treatment, or medicine would be the most beneficial, so as to ask it from his/her therapist, and c) the therapist is an one-member buying center (with the exception of the hospital treatments, where the drug choice may be made by

a doctors' council). In this sense, doctors' buying behavior leans toward the consumer buying. The relationship of personal traits and values of (the one-member buying center doctor) on buying behavior, no matter whether it aims to satisfy personal or, third parties' (the patients) needs, is well documented in the marketing literature, as discussed along the following.

1.1 Physicians' personal values as a basis of segmentation

Personal values of physicians have not been much studied although physicians' values are crucial to health care practice, and have come under scrutiny during recent years, especially regarding priorities in health care (Neittaanmaki, Gross, Virjo, Hyppola and Kumpusalo, 1999). Despite the fact that research regarding personal values of physicians is sparse, values and their distribution among various types of population have been thoroughly studied (Schwartz, 1992, 1994; Puohiniemi, 1995, Herche 1994). In consumer markets, homogeneous segments have been defined on the basis of consumer characteristics such as personality type and psychographics to explain differences in buying behavior (Raaij, Fred and Verhallen, 1994). Much of the research on values in marketing is based on the work of Rokeach (1968, 1973) and Herche (1994). Values serve to guide actions, attitudes, judgments, and comparisons across specific objects and situations. As a matter of fact, we suggest that physicians' personal values would be related to their drug prescription criteria and preferred communications elements.

1.2 Physician's drug prescription choice criteria

For the physician there is a trade-off between the benefits acquired through time spent with sales representatives (who provide them with information and free samples) and the opportunity cost of that time, which can be spent otherwise (seeing more patients, reading professional materials, conferring with colleagues, or simply enjoying leisure time). Second, information about new drugs and their applications and side effects is largely available from other sources physicians have access to: medical symposia and conferences, re-

search articles, and medical journals, to name a few. Third, there is anecdotal evidence that inertia and loyalty to specific drugs play some role in the choice of a drug prescribed by a physician. All these factors can render the influence of detailing and samples much less important (Gonul, et al. 2001). Furthermore, physicians' price sensitivity may vary significantly, depending on the patient income class, type of disease and patient's psychological reaction to the efficacy of the drug. Specifically, the physicians may consider cost efficiencies among drugs of similar efficacy for a given medical treatment, thus acting as agents for low-income patients. Alternatively, in chronic diseases, where there is often no immediately obvious curing effect, placebo effects are common (Gonul, et al. 2001). Anecdotal evidence suggests that, in such cases, physicians may keep prescribing the same drug for refills, if the drug has been reported to working by the patient, so that the placebo effects of the original brand remain undisrupted. Thus, the patient' compliance to taking the medicine properly, may play a role in the prescription drug choice. In this study, we examine the classification abilities of physicians' personal values on her/his prescription choice criteria.

1.3 Physicians' preference on marketing communication elements

Of the marketing tools available to the pharmaceutical firm, personal selling seems to be the most powerful in many marketing studies (Narayanan, Desirauju & Chintaguanta, 2004; Pitt and Nel 1988). Furthermore, Conlan (1991) reported that pharmaceutical companies in the USA spent more than US$165 million on gifts, trips and cash awards to physicians when promoting brand name drugs. For private practitioners, Baker (1992) suggested that more selective office-practice items, such as prescription pads and patient record forms, would be more effective not only because they provided a service to physicians and their staff, but also offered an added benefit of being perceived as less promotional. Williams and Hensel (1991) reported that the source of information about pharmaceuticals considered to be important by physicians, has changed in rank order, from

direct mail, journal advertising and detailing, to colleagues, conventions, meetings, and conferences. In this study, we examine the relationship of the marketing communication elements, with the classification variables of our physicians' research sample, i.e., physicians' values.

2. Methodology

2.1 Research Sample

A random sample of general practitioners and specialists was drawn from the database of Physicians' Union located in the city of Patras, due to distance proximity to our research institution. All the selected subjects were first contacted by telephone. Those giving consent were personally interviewed. Finally, a sample of 68 physicians responded, 38 general practitioners and 30 specialists. The sample of specialists comprised cardiologists, gynaecologists and neurologists/psychiatrists. It was decided that a face-to-face questionnaire-based survey would best serve the purposes of this small-scale exploratory study. For the purposes of our study, we were asking our participants to have in mind that their answers should be related to drugs of chronic diseases (i.e., hypertension, diabetics, osteoporosis, etc.) or completely curable diseases (i.e., common cold etc.) and not for irreversible severe cases.

2.2 Measures

All but the physicians' values scales were not available for most of the variables described in the study, thus, measures were developed following the guidelines suggested by Churchill (1979). All the measures were multi-item and scored on 5-point Likert-scales, anchored by "strongly disagree" and "strongly agree". The subsequent measures have coefficient alphas that range between 0.88 and 0.92, indicating acceptable levels of reliability (Nunally, 1978).

2.2.1. Physicians' values

For the physicians' value scales, Herche (1994) eight, out of nine, multi-item measures of values (MILOV) were used. A

series of exploratory and confirmatory factor analyses provided evidence that the eight values measures were distinct dimensions.

2.2.2. Drug prescription criteria
Specifically, the measurement was tapped by three constructs: (1) a three-item scale for the brand image, (2) a three-item scale for the market research and, (3) a two-item scale for the patients' compliance.

2.2.3. Physicians' preference on marketing communications elements
Finally, these measures were tapped by: (1) a four-item scale for publicity, (2) a three-item scale for detailing and sales leads and (3) a three item scale for sales promotion. The full survey is available upon request.

3. Analyses, discussion and future research

The analyses involved a series of correlations and a cluster analysis of the aforementioned survey data (Churchill, 1979).

3.1. Three clusters
Standard cluster analysis generated three clusters of physicians, described as "careerists," "brand loyal," and "bohemians", presented on Tables 1 and 2.

The greatest distance between final cluster centers was between Cluster 1 (careerists) and Cluster 3 (bohemians). A moderate distance was found between C1 (careerists) and C2 (brand loyal), along with a moderate distance between C2 (brand loyal) and C3 (bohemians). Physicians in Cluster 1 that were characterized as "careerists", constitute 35% of the sample. In respect to drug prescription criteria, these physicians place more emphasis on market research and patients' compliance. In respect to marketing communications, they appear to prefer publicity, whereas they posit significantly higher means for the values of self-respect, being well respected and warm relationships with others, compared to the rest two clusters.

Table 1. Final cluster centers.

	Cluster		
	1 Careerists	2 Brand Loyal	3 Bohemians
Drug Prescription Criteria			
f1_brand image	16,0	16,1	12,3
f1_market research	11,6	9,8	10,2
f1_patient's compliance	6,9	6,5	6,6
Preferred marketing commun. Elements			
f2_publicity	17,6	16,7	15,4
f2_detailing and sales leads	15,7	13,6	14,2
f3_sales_promotion	10,1	8,9	10,7
Physician's personal values			
f3_safety	15,2	13,0	13,7
f3_self respect	32,6	26,3	23,7
f3_being well respected	14,9	13,1	12,5
f3_self fullfillment	6,5	6,0	6,5
f3_sense of belonging	17,8	16,0	15,4
f3_fun & enjoyment	14,5	13,6	15,2
f3_warm relationships with others	17,8	15,9	14,4
f3_sense of accomplishment	21,2	19,4	18,4

Table 2. ANOVA table of cluster analysis.

	Cluster		
	Mean Square	F	Sig.
Drug Prescription Criteria			
f1_brand image	93,0	18,2	0,0
f1_market research	21,2	4,9	0,01
f1_patient's compliance	0,7	0,3	0,76
Preferred marketing commun. Elements			
f2_publicity	24,2	4,3	0,02
f2_detailing and sales leads	26,2	4,3	0,02
f3_sales_promotion	18,6	2,9	0,06
Physician's personal values			
f3_safety	28,0	4,5	0,01
f3_self respect	438,7	56,4	0,00
f3_being well respected	32,0	4,9	0,01
f3_self fullfillment	1,6	0,6	0,54
f3_sense of belonging	33,0	9,0	0,00
f3_fun & enjoyment	13,5	2,3	0,10
f3_warm relationships with others	59,7	15,7	0,00
f3_sense of accomplishment	40,5	6,6	0,00

The second Cluster characterized as "brand loyal", account for 36% of the sample and places more emphasis on the corporate brand name of the drug, whereas it rates the lowest means for the rest two prescription drug criteria, i.e. market research and patients' compliance. At the same time, this cluster accounts the lowest means to detailing, sales leads and sales promotion. As far the personal values are concerned, the brand loyal have the lowest means of the self-fulfillment and fun and enjoyment variables, compared to the physicians in the other two clusters. Finally, Cluster 3 described as "bohemians" accounts for 30% of the sample. To these physicians, the corporate brand name of prescribed drugs seems to be less important than in the rest two clusters. In regard, to preferred marketing communication elements, publicity was statistically lower, whereas promotion tools were statistically higher in perceived importance ($p<.01$), than in both the other clusters. From the values list, fun and enjoyment, together with self-fulfillment were perceived to be more important than to physicians in other clusters, whereas, self-respect, being well respected, sense of belonging, need for success and warm relationships rated lower than the rest two clusters. The research findings suggest that pharmaceutical companies should consider both consumer and industrial marketing strategy aspects when designing marketing and communication plans for the physicians' market. Thus, for example, a pharmaceutical company with a well-established brand name, should place less emphasis on sales promotion incentives to the physicians' target group which resembles to brand loyals. At the same time, pharmaceutical marketing executives should place more emphasis on the drug publicity and personal relationships when considering the target group of physicians' careerists. Finally, for the target group of bohemians, sales promotion activities appears to be the best suited strategy. Thus, this segmentation study may help marketing planners to match their marketing plans with the physicians' target groups. The design and pricing of different brands for each target group should also be considered.

The cluster analysis revealed that the physicians' personal values may be a meaningful basis of segmentation of these

actors in the pharmaceutical industry value chain. Further research is needed in order to examine the relationships of the aforementioned cluster rates with the physicians' demographics, i.e. years of employment, nature of occupation (private vs. public sector), number of patients, etc. This will provide even richer information on the relative importance of personal traits, when considering marketing communication programs. Moreover, a more extant research is necessary, considering a larger sample frame from all over Greece. As cross-cultural differences may influence personal consumer behavior, the aforementioned research should also be performed in a number of European countries, or elsewhere, in order to assess generalizability of the research results. A more extant list of research construct items may also be in order.

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* The appendix with the research items may be kindly available, upon request.

References

Avlonitis, G. J. and Panagopoulos, N. G. (2004). Antecedents and Consequences of CRM Technology Acceptance in the Sales Force", *Industrial Marketing Management*, 33 (6)1, August, 475-489.

Baker, C. (1992). Desk-top media provide cost-efficient targeted promotion, *Medical Marketing & Media,* 27 (4), 68-74.

Foundation for Economic and Industrial Research-IOBE. (2005). The Pharmaceutical Market in Greece. *Health Economics Unit,* www.iobe.gr.

Gonul, F., Carter F., Petrova, E. & Srinivasan, K. (2001). Promotion of prescription drugs and its impact on physicians' choice behaviour. *Journal of Marketing,* 65(July), 79-90.

Hellenic Association of Pharmaceutical Companies, 2005. The Pharmaceutical Market in Greece - Facts & Figures, http://www.sfee.gr/category/ english/80/0/100/1/index.html

Herche, J. (1994). Measuring Social values: a multi-item adaptation to the list of values (MILOV) Working Paper Report, # 94-101. Cambridge, MA: Marketing Science Institute.

IMS Reports. (2005). : http://www.imshealth.com/ims/portal/front/articleC/ 0,2777,6599_3665_41336931,00.html

Kotler, P. (2000). Marketing management. 10th ed. Upper Saddle River (NJ): Prentice Hall.

Liu, S. (1995). A comparison of pharmaceutical promotional tactics between Hong Kong and China. *Journal of Business and Industrial Marketing,* 10(1), 34-43.

Mehta, A., Purvis, S. (2003). Consumer response to print prescription drug advertising. *Journal of Advertising Research,* June, 194-206.

Mudambi, S. (2002). Branding importance in business-to-business markets- three buyer clusters. *Industrial Marketing Management,* 31, 525-533.

Mukherji, P. (2004). Estimating the Effects of Direct-to-Consumer Advertising for Prescription Drugs: A Natural Experiment. Marketing Science Conference, Rotterdam Proceedings, 48.

Narayanan, S., Desiraju, R. and Chintagunta, P. (2004). ROI Implications for Pharmaceutical Promotional Expenditures: The Role of Marketing Mix Interactions. *Journal of Marketing,* 68, 4 (October), 90-105.

Neittaanmäkia, L., Grossb, E., Virjoc, I., Hyppöläd, H. and Kumpusalo, E. (1999). Personal values of male and female doctors: gender aspects. *Social Science & Medicine,* 48 (4), February, 559-568.

Physicians' Union of Patras, Greece. (2005). http://www.ispatras.gr/portal/_index.php?option=com_content&task=view&id=11&Itemid=47

Pitt, L., Nel, D. 1988. Pharmaceutical promotion tools - Their relative importance. *European Journal of Marketing*, 22 (5), 7-14.

Wieringa, J., Leeflang, P., Ruiz, E. and Wittink, D. (2004). Longitudinal and Cross-Sectional Effects of Marketing Instruments on Diffusion of Pharmaceuticals. *33rd EMAC Conference Murcia Proceedings*, 163.

Williams, J.R. and Hensel, P.J. (1991). Changes in physicians' source of pharmaceutical information: a review and analysis. *Journal of Health Care Marketing,* 11(3)(Sep.), 46-60.