Prescription loyalty behavior of physicians: an empirical study in India

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Abstract
Purpose – This paper seeks to empirically identify the major factors that influence physician loyalty behavior in prescribing certain brands of drugs.

Design/methodology/approach – Testable hypotheses were developed with respect to physician loyalty behavior regarding drug prescription practices, and a survey questionnaire was designed to capture the data from 71 physicians, as a convenience sample. The hypotheses were tested by PLS path modeling.

Findings – The major finding is that tangible rewards to physicians by the pharmaceutical companies lead to prescription loyalty. The second major finding is that the professional values of pharmaceutical sales representatives (PSR) impact significantly on physician prescription loyalty. The hypotheses related to the impact of PSR personality, drug quality, corporate reputation and professional influence on prescription loyalty were not supported in the study.

Practical implications – The results should prove useful to pharmaceutical companies in developing physician loyalty to particular brands as well as enhancing the understanding of drug control authorities and governmental health policy makers, in controlling unethical medical practices by physicians.

Originality/value – This paper reports an original empirical study on physician loyalty behavior in the context of drug prescription.

Keywords Prescription behaviour, Prescription loyalty, Pharmaceuticals industry, Promotions, Drug administration, India, Doctors

Paper type Research paper

Introduction
For a pharmaceutical company, success depends on judgments or decisions about a company’s drugs by physicians, through their evaluation process in considering several factors. This is referred to as physician prescription behavior. This behavior could be transactional and depend on currently available information about the company and its drugs and the patient’s condition. Some physicians adopt the drugs of certain companies and prescribe the same brand, based on the success of previous treatments (Campo et al., 2005). Such physicians develop loyalty to certain companies’ drugs for certain treatments and the companies also encourage such loyalty. This phenomenon is widespread across many countries. Consumer rights activists often
complain that physicians are influenced unethically by the promotional activities of pharmaceutical companies, which lead to their persistence with certain companies’ drugs. Empirically diagnosing this phenomenon, the prescription loyalty behavior of physicians, enables pharmaceutical companies to build loyalty in physicians’ prescriptions. The work also guides the governmental health policy makers on ways of controlling unethical medical practices by physicians.

Although, there are many studies in the marketing field on brand loyalty, we rarely find studies in the area of prescription brand loyalty, apart from Janakiraman et al. (2008) on physician persistence. There is also growing concern with respect to the physician-oriented optimization of pharmaceutical company promotional expenditures. An optimal use of the promotional mix is required to reduce unnecessary cost and also to overcome criticisms of “over promotion” that portrays pharmaceutical companies as unethically influencing physicians’ prescriptions (Lim et al., 2008). This present research attempts to empirically identify the major factors that influence physician loyalty in prescribing certain companies’ drugs. Investigating the factors determining prescription loyalty in drug choice is critical to understanding physicians’ responses to the promotional activities of pharmaceutical companies.

Our study should prove useful to pharmaceutical companies wishing to develop physician loyalty to a particular brand as well as enhancing the understanding of drug control authorities and governmental health policy makers, who wish to curb unethical medical practices by physicians. In the medical field, there is considerable research on physician prescription behavior. We draw on certain theories of physician prescription behavior in the medical field, and on brand loyalty theories in marketing, thus identifying the factors influencing prescription loyalty. We first discuss the existing literature on prescription behavior, and then empirically investigate the factors that influence the prescription loyalty behavior of physicians.

Literature review
Prescription behavior studies mostly include “expectancy-value” model and normative factors for understanding physician’s prescription decisions. For physician’s prescriptions, in the “expectancy-value” model, expectancies about treatment outcomes and the value or desirability of those outcomes in explaining drug choices is compared (Segal and Hepler, 1982). Although normative factors also included expectancies, these expectancies are related to professional acceptability and patient demands (Harrell and Bennet, 1974; Epstein et al., 1984).

Denig et al. (1988) attempted to identify the contribution of values and norms in the prescription behavior model. They developed a drug choice model, which includes the physician’s attitudes, norms and personal experiences with prescribing drugs. The model was tested in the Netherlands, which revealed that a particular drug choice results from the interaction of expectancies and values about treatment outcomes (attitudes), normative factors and personal experiences. The results of their study suggested that in some fields of prescribing drugs, physicians consciously weigh distinct pros and cons before choosing a drug, while in other fields the drug choice is less reasoned. In the latter case, other less discerning factors might be more relevant. Of the factors included in their study, the stated influence of patient demand on the drug choice itself was found to be negligible.
The role of physicians is considered crucial for drug purchase decisions. The physicians perform the roles of users (sometimes), influencers, gatekeepers and deciders, while patients perform the role of buyers and users (Abratt and Lanteigne, 2000). Hence, determining how exactly physicians get influenced is critical for the success of a pharmaceutical business. Abratt and Lanteigne (2000) identified marketing factors (sales representatives, advertising, price of the product to the patient, trade fairs and symposia) and professional factors (journals, prior experience and education, opinion leader influence, recommendations by colleagues, patient demands) that influence physician prescription behavior.

Dey et al. (1999) studied pharmaceutical marketing in India and suggested that the point of differentiation lies with pharmaceutical sales representatives (PSR) and their relationship with doctors. Furthermore, they identified other marketing tools such as advertising, marketing research, public relations and distribution. Mizik and Jacobson (2004) assessed the role of two central components of pharmaceutical marketing practices (namely, detailing and sampling) on physician prescribing behavior and found that detailing and free drug samples have positive and statistically significant effects on the number of new prescriptions issued by a physician.

Continuity in prescribing the same company’s drugs or prescription loyalty is also a very important phenomenon in prescription behavior (Janakiraman et al., 2008). This could be derived from the trust the physician develops in the pharmaceuticals. Bednarik (2005) explained how trust in pharmaceuticals is developed and influenced. He suggests that trust develops mostly from product benefits obtained by emotional (trustworthy communication, satisfied patients) and that are of a self-expressive (recognition as professional) nature. Furthermore, trust in pharmaceuticals seems to evolve from repetitive product usage accompanied by positive experiences. The role of marketers is limited to before and at the launch of drugs, by raising relevant expectations and giving physicians suitable guidance on product usage. Positive experience gained during the treatment phase is decisive for product usage in repeated prescriptions. Subsequent changes in doctors’ perceptions seem harder to achieve.

Janakiraman et al. (2008) investigated physician habit persistence in prescription choice behavior and found significant levels of persistence in drug choice. They described physician current drug choice as structurally dependent on the previously prescribed drugs and defined this structural dependence of sequential choices as the “persistence phenomenon” in physician’s prescription behavior. They argued that physicians do not frequently change their preferences; they tend to be either persistent or non-persistent. With respect to physician response to the promotion of prescription drugs, the non-persistent physicians were found to be responsive to detailing and symposium meetings, whereas persistent physicians seem to be responsive only to symposium meetings, with outside-office events, such as golf or lunch, having no effect on physician choice. They also found that detailing and symposiums can have long-lasting effects, older physicians and those who work in smaller practices are more likely to be persistent, and physicians who are more willing to receive sales force representatives have a lower likelihood of being persistent.

Hypothesis development
From the above literature review, it is evident that most of the studies focused only on momentary one-off physician’s prescription decision or drug choice behavior apart
from Janakiraman et al. (2008) who studied physician habit persistence (continuity in prescribing same drug). Specifically, they focused on the impact of promotion on persistence such as detailing, symposium meetings, outside-office events and on physician characteristics such size of practice and age. Physician prescription-decision-behavior studies identified several other factors that influence physician drug choice, such as relationship with PSR (Dey et al., 1999), professional influence (Abratt and Lanteigne, 2000), corporate reputation (Wright and Lundstrom, 2004), and drug quality (Denig et al., 1988). We broadly hypothesize that these factors might also impact physician prescription loyalty behavior. According to our conceptual model, PSR relationship factors such as PSR professional value, PSR likability and PSR similarity (Dey et al., 1999), company factors such as drug quality, corporate reputation and tangible rewards (Denig et al., 1988; Wright and Lundstrom, 2004; Mizik and Jacobson, 2004) and physician factor such as professional influence (Abratt and Lanteigne, 2000) are expected to impact the prescription loyalty behavior of physicians. Figure 1 presents the proposed conceptual model of physician prescription loyalty behavior. We provide a detailed theoretical justification for our hypotheses in this section.

PSR factors

*PSR professional value.* Singhapakdi and Vitell (1993, p. 528) define professional values as “values relating to one's professional conduct that are commonly shared by the members of a particular profession”. Wright and Lundstrom (2004) describe PSR values as having three components such as honesty (free from deception), trustworthy (worthy of confidence) and ethical (exhibiting professional conduct) as perceived by physicians. Our focus for this study is on physician perception. Hence, we define PSR

![Conceptual model of prescription loyalty behavior](image-url)
professional values as the physician’s impression of the PSR’s professional conduct as to whether it is appropriate and compatible with their professional ethics and standards.

PSRs are considered to be one of the important sources of information for physicians in making their prescription decisions (Wazana, 2000; Alkhateeb et al., 2009). Unless physician perceptions are positive about a particular PSR in terms of professional values, they may not trust that PSR and not prescribe that PSR company drugs (Wright and Lundstrom, 2004). When physicians perceive a particular PSR as having high professional values, it enhances the trustworthiness of the PSR which translates into the continuing prescription of the company’s drugs (Doney and Cannon, 1997). Therefore, we formulate our first hypothesis as,

\[ H1. \] A higher perceived level of PSR professional values can lead to a higher level of prescription loyalty.

**PSR likability.** PSR likability refers to the physician’s assessment that a particular PSR is friendly, nice and pleasant to be around (Doney and Cannon, 1997). Prior psychological research generally finds a positive relationship between a person’s likability and the extent to which the person is trusted by others. Doney and Cannon (1997) also found that salesperson likability positively impacts on buyer trust. While the likable PSRs were found to be trustworthy, physicians tend to continuously prescribe the drugs of the particular PSR’s firm. Therefore, our second hypothesis is as follows:

\[ H2. \] A higher level of likability leads to a higher level of prescription loyalty.

**PSR similarity.** Similarity strengthens a physician’s belief that the PSR shares common interests and values. In goal interdependent situations, similarity can be a cue for expecting the other party to facilitate one’s goals (Johnson and Johnson, 1972). Therefore, similarity can trigger the intentionality and/or prediction process. Physicians who perceive the PSR as similar to him/herself could expect it to hold common beliefs about appropriate behaviors and goals (Doney and Cannon, 1997). Similarity also exhibits the trustworthiness of the PSR (Doney and Cannon, 1997). When physicians find the PSRs trustworthy, they are likely to believe the information that he/she attributes for his/her company. This enhances the likelihood of the physicians always prescribing the drugs of the PSR’s company. Therefore, we formulate our third hypothesis as:

\[ H3. \] A higher level of similarity leads to a higher level of prescription loyalty.

**Pharmaceutical company factors**

**Drug quality.** Substantive research in marketing provides evidence that consumers prefer to repurchase from the same manufacturer, if its perceived product quality is higher (e.g. Kennedy et al., 2001). Berndt et al. (1996) conducted an exploratory four-firm market-share analysis in the USA and found that product quality (measured by side-effect profiles, efficacy, dosage forms, and indications for which the product had received FDA approval) affects the sales quantities of the pharmaceutical firm. In reality, drug quality is little more than physician perceptions as to how well a particular drug from a particular pharmaceutical firm will perform for a particular patient’s conditions. Physicians form expectations about treatment outcomes and
consider their personal experiences with a particular treatment and expectations from the social environment, thus forming perceptions about drug quality, which further attributes their drug choice (Denig et al., 1988). As Gonul et al. (2001, p. 81) describe:

[...] there is anecdotal evidence from physician discussions that even when the main ingredients are known to be the same in competitive brands of drugs, physicians keep prescribing the same drug for refills if the drug has been reported as working by the patient, so that possible placebo effects of the original brand remain undisrupted.

Physicians develop impressions about the quality of the drug on the basis of the results that they observe in their treatments. If the company’s drug is found to be effective, the physicians prescribe the same drug in their next prescription for a similar ailment. Therefore, our fourth hypothesis is:

\[ H4. \] A higher level of perceived drug quality leads to a higher level of prescription loyalty.

Corporate reputation. Fombrun and van Riel (1999, p. 10) define corporate reputation as:

[...] a collective representation of a firm’s past actions and results that describes the firm’s ability to deliver valued outcomes to multiple stakeholders. It gauged a firm’s relative standing both internally with employees and externally with its stakeholders, in both its competitive and institutional environments.

There is a significant level of corporate reputation for some corporate brands among all its stakeholders in pharmaceutical industry (Moss, 2001). Companies like Novartis, AstraZeneca, Sanofi etc., have enhanced their corporate brand equity through their marketing communications (Moss, 2001). TNS Healthcare conducted an internet survey with more than 1,500 general practitioners across the US, UK, France, Germany, Italy and Spain and found that physicians in Europe rated Novartis no. 1 on service delivery and Merck received the top ranking in US (TNS Health Press Release, 2009). We define corporate reputation as the extent to which the company is trusted, admired and respected by physicians. Wright and Lundstrom (2004) contended that physician-perceived corporate reputation is likely to impact perceptions of PSR. If physicians assume that the company’s reputation is well deserved, they tend to always prescribe its drugs based on the company’s history of effective drugs. Therefore, our fifth hypothesis is:

\[ H5. \] A higher level of corporate reputation leads to a higher level of prescription loyalty.

Tangible rewards. The pharmaceutical companies provide tangible rewards in the form of free samples and gifts that include financing for domestic and international conference participation, travel and accommodation, medical education, meals, honoraria and small gifts like pens (Wazana, 2000; Madhavan et al., 1997; Brett et al., 2003). However, one cannot state that physicians prescribe only on the basis of the rewards that they receive from the company, but the rewards certainly help physicians to remember the company brands (Wazana, 2000) and to prescribe them regularly. Gwinner et al. (1998) found a significant positive relationship between preferential
treatment and trust, as customers perceive special treatment as a benefit resulting from their relationship with a seller. Therefore, our sixth hypothesis is:

\[ H6. \text{ A higher level of tangible rewards leads to a higher level of prescription loyalty.} \]

**Physician factor**

**Professional influence.** Normally, most physicians attend conferences, seminars and workshops where they are advised to prescribe a particular company’s drugs. The physicians also meet their peers and interact with them about their experiences. Furthermore, they may have observed senior physicians prescribing a particular company’s drugs. These influences are not directed by the company, but have the potential to impact on prescriptions. Physicians might also believe that something which is successful – based on other physicians’ experiences – could also apply to their treatments. Nair et al. (2010) quantified the impact of social interactions and peer effects in the context of physician prescription choices and found that physician prescription behavior is influenced significantly by the behavior of active research specialists, or “opinion leaders,” in the physician’s reference group. Therefore, we formulate our seventh hypothesis as follows:

\[ H7. \text{ A higher level of professional influence leads to a higher level of prescription loyalty.} \]

**Research methodology**

**Measurement of the variables**

The measures used in this study are explained in the following subsections. The majority of constructs were measured using multiple items, where the respondents were asked to indicate the extent of their agreement on a scale from 1 (strongly disagree) to 7 (strongly agree).

**PSR professional values**

We developed this scale from the salesperson competence scale developed by Kennedy et al. (2001) and Doney and Cannon (1997). We adapted this scale with SIX items to suit the specific situation, with the pharmaceutical sales representatives.

**PSR likability**

PSR likability was measured with the scale developed by Doney and Cannon (1997). This scale has three items with a Cronbach’s alpha of 0.90.

**PSR similarity**

PSR similarity was measured with the scale of Doney and Cannon (1997), which has three items with a 0.90 Cronbach’s alpha.

**Drug quality**

Batt (2000) measured product quality with 14 items. This scale was adapted to our specific context. The refined scale has five items.
**Corporate reputation**

Fombrun et al. (2000) measured corporate reputation with two second-order factors:

1. emotional (the first factor with three items); and
2. rational factors (the other five factors with 17 items).

In this present study, we used the first factor with three items to measure physician-perceived corporate reputation.

**Tangible rewards**

De Wulf and Odekerken-Schröder (2003) developed a scale with two items for measuring tangible rewards. This scale is adapted to the pharmaceutical industry and refined with three items.

**Professional influence**

Crosby and Stephens (1987) measured customer product information through external personal sources, using four items. We modified this scale to the contextual requirements and developed a three-item scale for professional influence on physicians.

**Prescription loyalty**

Reynolds and Beatty (1999) measured customer loyalty with four items. We again adapted this scale to the context and included two items for measuring prescription loyalty.

**Data collection method**

A survey was carried out to test the research hypotheses. One of the authors worked as a pharmaceutical sales representative in Coimbatore city of Tamil Nadu, India. The survey was conducted with those physicians who have a private practice and with whom he had been in contact for a considerable time. Therefore, the sampling method can be considered as one of convenience. The questionnaire was delivered at the physicians’ offices and a brief on the objectives and potential benefits of the research was also provided at a personal meeting with the physicians. The physicians filled in the questionnaire at an appropriate time and the completed questionnaires were collected within a certain period of time.

**Analysis and findings**

The results of the study are presented in three parts. These are sample characteristics, reliability and validity assessment and hypotheses testing, which are discussed in the following sections.

**Sample characteristics**

The total number of respondents was 71 and the demographics are shown in Table I. Both genders participated equally in this survey. With respect to age, around 40 percent of the respondents were in the age group 30-39, and about 27 percent between 40-49.
Statistical analysis

Validity analysis. The validity test deals with whether the items measure what they are meant to measure. The content or face validity is normally assessed by a group of experts in the field, who read or look at a measurement technique and decide whether, in their opinion, it measures what its name suggests. Each instrument must pass the face validity test, either formally or informally (Kidder and Judd, 1986). Since all the measures used in our study have already been used in previous research, which also indicates the face validity, an informal face validity test was conducted.

Exploratory factor analysis was used for further scale assessment (Lewis-Beck, 1992). This is a useful technique for determining the minimum number of separate components that might exist within each measure. All measures used in the research have already been tested in previous research. Hence, the same components as in the original measures were expected. An exploratory factor analysis was carried out using SPSS 17.0 as the first step in examining the validity of each measure. All the items of all the measures were factor analyzed together so as to test the convergent and discriminant validity. The items were subjected to principal component analysis (with varimax rotation). The factor loading represents the correlation between the items with the construct (Hair et al., 1992). The Eigen values represent the amount of variance accounted for by a given factor (Hair et al., 1992). In component analysis, only the factors with Eigen values greater than 1 are considered significant (Hair et al., 1992). A minimum value of 0.50 was used to indicate the loading of any factor. We conducted a series of factor analyses and removed certain items due to low factor loadings and high cross loading. Items of likability and similarity measure were loaded together and hence, we refer to this variable as PSR personality. Furthermore, only the items presented in Table II were used for further analysis.

Reliability analysis. The reliability test for the questionnaire concerns the extent to which the measuring procedure yields the same results over repeated trials. The reliability analysis of the scales is generally conducted with coefficient alpha (Cronbach, 1951). In this research, the Cronbach alpha was also used to test the reliability, based on the internal consistency method, with the help of SPSS 17.0.

The results of the reliability analysis, along with the items of the various measures, are provided in Table III. The measures such as PSR professional values, PSR personality, drug quality, corporate reputation, tangible rewards, professional influence and prescription loyalty have Cronbach alphas of 0.74, 0.73, 0.73, 0.86,
PLS path modeling. In order to further examine the convergent and discriminant validity of the measures and to test the hypotheses of the structural relationships between the proposed constructs, we employed a statistical technique called PLS based structural equation modeling (Henseler et al., 2009; Barclay et al., 1995; Chin, 1998; Wold, 1985). The PLS structural equation modeling is variance-based, which does not require multivariate normal data and is more suitable for studies with a small sample size compared to the covariance-based approach to structural equation modeling applied in LISREL (Chin, 1998; Wold, 1985). PLS structural equation modeling is appropriate in our study, as it constitutes a convenience sampling method for data collection and we have a small sample size \( (n = 71) \) for which the violation to the assumption of normality is high (Urdan, 2005). Chin and Newsted (1999) suggested that the sample size requirement of PLS would be ten times the number of independent latent variables in the structural equation, that is, six multiplied by ten, yielding 60. The sample size in this study is above the PLS requirement. PLS path modeling is widely accepted and has been used increasingly in the marketing literature for data analysis (e.g. Voola and O'Cass, 2010; McCarthy-Byrne and Mentzer, 2010; Lim et al., 2008).

The PLS path modeling estimates both factor loadings and the path coefficients simultaneously. We used XLSTAT 2.05, a Microsoft Excel add-in software that allows using the PLS path modeling approach with Excel. We estimated the parameters in the structural model to assess the construct validity of the measures in the study and to test for the substantive relationships in the conceptual model.

The average variance extracted (AVE) was examined for the constructs used in our study, in order to test their convergent validity (Chin, 1998; Fornell and Larcker, 1981).
AVE ranged between 0.50 and 0.87 and exceeded the 0.5 cut-off value proposed by Fornell and Larcker (1981). To assess the discriminant validity of the constructs, we examined whether the square root of the AVE for each construct is greater than the correlations between that construct and all others in the model (Barclay et al., 1995; Chin, 1998; Hulland, 1999). The results in Table IV show a satisfactory level of discriminant validity.

**Hypothesis testing.** As the reliability and validity tests for the constructs in our study were satisfactory, we further examined the path coefficients results derived from PLS path modeling for the hypothesis testing. The bootstrapping technique with 100 resamples was used to obtain t-values of the path coefficients (Henseler et al., 2009). The results in Table V demonstrate that the structural model explains 50.3 percent of the variance in prescription loyalty ($R^2 = 0.503$).

As discussed in the validity section, the factor analysis suggested the combination of likability and similarity as a new independent variable, namely, PSR personality. Hence, $H2$ and $H3$ were modified to form $H2+H3$. The factors such as PSR

<table>
<thead>
<tr>
<th>Scale</th>
<th>Cronbach alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PSR professional values</strong></td>
<td>0.74</td>
</tr>
<tr>
<td>This PSR presents balanced cases to aid informed decision-making</td>
<td></td>
</tr>
<tr>
<td>This PSR exhibits professional standards of conduct at all times</td>
<td></td>
</tr>
<tr>
<td><strong>PSR personality</strong></td>
<td>0.73</td>
</tr>
<tr>
<td>This PSR is always nice to interact with</td>
<td></td>
</tr>
<tr>
<td>This PSR is someone I like to have around</td>
<td></td>
</tr>
<tr>
<td>This PSR shares similar interests with me</td>
<td></td>
</tr>
<tr>
<td>This PSR has similar values to mine</td>
<td></td>
</tr>
<tr>
<td>This PSR behaves very similarly to me</td>
<td></td>
</tr>
<tr>
<td><strong>Drug quality</strong></td>
<td>0.73</td>
</tr>
<tr>
<td>The drugs of this PSR company are available in a comfortable dosage</td>
<td></td>
</tr>
<tr>
<td>The drugs of this PSR company have a comfortable mode of action in the body</td>
<td></td>
</tr>
<tr>
<td>The drugs of this PSR company cost less for the patient</td>
<td></td>
</tr>
<tr>
<td><strong>Corporate reputation</strong></td>
<td>0.86</td>
</tr>
<tr>
<td>I have a good feeling about the company</td>
<td></td>
</tr>
<tr>
<td>I admire and respect the company</td>
<td></td>
</tr>
<tr>
<td>I trust this company</td>
<td></td>
</tr>
<tr>
<td><strong>Tangible rewards</strong></td>
<td>0.66</td>
</tr>
<tr>
<td>This PSR rewards me for my regular prescription of its drugs</td>
<td></td>
</tr>
<tr>
<td>This PSR provides with an adequate quantity of free sample drugs</td>
<td></td>
</tr>
<tr>
<td><strong>Professional influence</strong></td>
<td>0.69</td>
</tr>
<tr>
<td>I attended a seminar that resulted in my prescribing the drug from this PSR company</td>
<td></td>
</tr>
<tr>
<td>My colleagues recommended me that I prescribe the drug from this PSR company</td>
<td></td>
</tr>
<tr>
<td><strong>Prescription loyalty</strong></td>
<td>0.85</td>
</tr>
<tr>
<td>I always prescribe the drugs of this PSR company</td>
<td></td>
</tr>
<tr>
<td>I am really committed in prescribing drugs of this PSR company</td>
<td></td>
</tr>
</tbody>
</table>

Table III. Measures of the study and reliability test

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Professional values, tangible rewards and professional influence were found to significantly affect physician prescription loyalty. Both tangible rewards (path coefficient \(= 0.628; t\)-value \(= 6.228; p < 0.01\) level) and PSR professional values (path coefficient \(= 0.192; t\)-value \(= 2.121; p < 0.05\) level) positively impact prescription loyalty, thus supporting our hypotheses. However, interestingly, professional influence exerts a moderate negative impact on prescription loyalty (path coefficient \(= -0.180; t\)-value \(= -1.944; p < 0.10\) level) which contradicts our initial hypothesis. All other hypothesized factors such as PSR personality, drug quality and corporate reputation were found to have no significant relationship with prescription loyalty.

### Discussion and Implications

This paper examined the factors that influence the development of physician prescription loyalty behavior. The factors included in our conceptual model were drawn from previous research findings of physician prescription behavior studies. However, the focus of our study is on prescription loyalty, (continuity in prescribing same company drugs) which differs from previous studies which focused on momentary one-off prescription decisions. Hence, the results of our study do not in any way contradict the existing research findings on prescription behavior but provide new orientation for this genre of studies.

In our study, we found drug quality to be a non-significant factor for prescription loyalty. According to prescription behavior studies, drug quality is a major factor for physician prescription or drug choice (Denig et al., 1988), but, it did not emerge as a significant factor for creating prescription loyalty in our study. However, this does not mean that physicians do not consider drug quality at all in their prescription decisions.
Rather, it means that even though drug quality is an important factor for drug choice at that particular moment of prescription, physicians do not consider drug quality for their prescription loyalty and might consider other factors in this context. Otherwise, the consequence would be highly unethical practices of prescribing poor quality drugs which would jeopardize the health of patients and ultimately hurt physicians’ future medical practice. Why should any physician prescribe a poor quality drug? From the physicians’ perspective, drug quality might be a “point of parity”[1] factor in comparison to other pharmaceutical company’s drugs (Keller, 2008). It means that physicians consider drug quality as an important factor for momentary prescription decision but perceive this factor as same across competing pharmaceutical companies. Similarly, they would consider other non-significant factors from our study, such as PSR personality and corporate reputation, as “point of parity” factors as previous research has confirmed their importance for prescription decision. It should be understood that these factors are compulsory common minimum factors for prescription decision which are provided by all pharmaceutical companies and which no longer differentiates one company from the other and hence physicians consider other factors for loyalty. The other factors are considered to be “points of difference”[2] for prescription loyalty (Keller, 2008). In our study, tangible rewards and professional values turn out to be “points of difference” for prescription loyalty.

The first major finding of the study is about tangible rewards leading to prescription loyalty. Although several prescription behavior studies have suggested that physicians consider rewards in their prescription decisions (momentary) (Wazana, 2000; Madhavan et al., 1997; Brett et al., 2003), we found that tangible rewards are a significant factor in physicians’ continuity in prescribing the same company drug. By this result, we understand that physicians are committed in prescribing a particular company’s drugs on the basis of the recognition shown by the pharmaceutical company for continuous patronage. The finding is not surprising. As mentioned earlier in the literature review, apart from our study, Janakiraman et al.’s (2008) study, which analyzed a panel data set for the anti-depressant therapeutic drug in the UK, indirectly suggested that tangible rewards seem to impact persistence in prescription. They found that the persistent physicians were responsive to “symposium meetings”, which are a form of reward provided by the pharmaceutical company to the physicians for their patronage. A study conducted by Tengilimoglu et al. (2004) in Turkey among PSRs, showed precisely how important rewards are for physicians’ prescriptions. Most of the PSRs in their study reported that physicians are commonly influenced by non-medical considerations during their interactions and request gifts other than medical products. When the PSRs of competing pharmaceutical companies approach physicians to prescribe their company’s drugs, and when other considerations like drug quality, corporate reputation etc., from competing pharmaceutical companies appears similar to physicians, they are normally influenced by something different and valuable to them in the context of continuous patronage. The rewards provided by the pharmaceutical companies provide just this.

From a relationship marketing point-of-view, there is nothing necessarily wrong with pharmaceutical companies providing tangible rewards for prescription loyalty to their physicians (customers). Rewards are provided to physicians by the pharmaceutical companies in recognition of the ongoing relationship with the companies. It is a known fact in marketing that relationship-based customers have to
be respected and recognized, by providing some form of reward for their continued relationships. This is also practiced in many service industries such as air travel, credit cards and various branches of retailing. If a customer regularly flies with a particular airline, the airline gives out points that can be accumulated and exchanged for gifts or upgrades.

The finding implies that pharmaceutical companies in India should focus their efforts on providing tangible rewards to physicians for their prescription loyalty. However, companies must be careful as to how and what kind of rewards would be effective in the short- and long-term. Free samples would be useful in the short run as a reminder of new drug trials (Campo et al., 2005) and it may also help physicians to provide these free samples to their patients who are poor. In India, around 70 percent of households use their own savings for healthcare expenditures, as direct and indirect governmental support is minimal and health insurance is a very nascent industry (Sujatha et al., 2005). When patients find that their physicians provide free sample drugs, they feel positive about the physicians and therefore they spread positive word of mouth about them, which in a way, supports and fosters the physicians’ private medical practice in the long run. However, in the US, Gonul et al. (2001) found that providing free samples beyond a particular limit would be counterproductive, as physicians tend to perceive the pharmaceutical company as desperate and too aggressive. They also found that providing free samples would be ineffective with respect to prescription, when patients are covered by insurance. In such situations, the company may rather consider providing free conference participation, as this too influences drug choice by physicians (Campo et al., 2005).

The point of concern would be whether the physician remains loyal or committed to the drugs of a particular company, due to the tangible rewards, even though the drugs are ineffective and of poor quality. Although, physicians consider drug quality as a “point of parity” factor, there would still be chances that some physicians who are highly influenced by tangible rewards may be tempted to prescribe wrong drugs. In such a situation, the role of drug control authorities and governmental agencies is very important. These agencies should be vigilant and monitor tangible rewards as they have the potential to promote unethical and fraudulent practices by both physicians and pharmaceutical companies. In a country like India, companies providing free samples are welcomed as they help poor people obtain medicines from physicians free of cost. Financing symposiums and conferences as recognition for physician patronage also helps companies achieve prescription loyalty. From a public policy perspective, these measures should arguably be subjected to the vigilance of governmental agencies. Our research found a moderate negative relationship between professional influence and prescription loyalty ($p < 0.10$ level) contradicting our initial hypothesis. This implies that professional influence moderately reduces prescription loyalty. It may be because physicians want themselves to be seen as unique and independent and not known to be following any of their peers’ or seniors’ suggestions or practices. The basic argument in favor of the symposium meetings and conferences, is that these forums provide opportunities to physicians to interact with fellow physicians and learn about new drugs and techniques. However, according to our results, it seems that physicians are negatively influenced for prescription loyalty through these professional interactions. Accordingly, the basic question would be as to why physicians participate in symposiums and conferences. To answer this, we have to
understand how these symposium meetings and conferences are perceived by physicians, given that most of these events are held at popular tourist destinations (Anand, 2011). It does indeed seem that physicians combine a degree of work with vacation and leisure travel (Anand, 2011). It is not fundamentally wrong for pharmaceutical companies to finance conference participation, but physicians should not be unduly influenced by such practices. Hence, government agencies should realize that these activities often extend far beyond mere education and development. Therefore, due vigilance on the financing of symposiums and conference participation by the pharmaceutical companies for physicians, is clearly necessary.

Government agencies should also monitor potentially unscrupulous activities in terms of providing gifts in other forms. The popular UK newspaper, The Guardian, reported the findings of “Consumers International”[3] that the developing world is an easy target for multinationals and states:

An unnamed Indian doctor told researchers: “Gifting” of air conditioners, washing machines, microwaves, cameras, televisions, and expensive crystals is an accepted norm nowadays. So are frequent pampering in the form of CMEs (continuing medical education meetings) and lectures in star hotels followed by lavish dinners and cocktails (Boseley, 2007, p. 17).

Considering the severity of the problem, the Medical Council of India has recently introduced regulations that restrict physicians with respect to, “accepting gifts, travel facilities and hospitality from pharmaceutical companies in lieu of promoting their products” (Dhar, 2010). The enforcement of these regulations has to be strictly followed.

The second major finding of our study is that PSR professional values impact significantly on the prescription loyalty behavior of physicians. This is an important result for the pharmaceutical companies in terms of adopting and nurturing the professional values of their PSRs. This is even more important, due to the fact that most of the countries have brought in strong regulations relating to physicians accepting tangible rewards. If providing tangible rewards (which is found to be a significant factor for prescription loyalty) seems more difficult, companies need to understand that tangible rewards can no longer be a “point of difference” due to government agency intervention, so that they have to focus far more on PSR professional values. This will remain a “point of difference” and generate physician trust and consequently prescription loyalty in the long run. PSR training programs should therefore concentrate on training values and ethics in guiding and detailing drugs to physicians.

Limitations and future research
One cannot generalize the results of this study, because the sample size is small \( n = 71 \) and the sampling method is highly convenient. This led us to use PLS path modeling to empirically test our conceptual model. Subsequent research should use larger samples size and a random sampling technique, which would enable the use of a more robust statistical analysis with LISREL. Consequently, the results of such research will be statistically stronger and allow for more variations in collected data. Furthermore, all the physicians were met regularly by one of the authors of the paper, who was working as a PSR in the area of study, consequently there could be response bias from physicians in favor or against the PSR. We strongly recommend that a
A comprehensive study on prescription loyalty should be introduced by the government and drug control authorities, which should be implemented by a neutral agency, given the huge public policy implications. There should also be stricter rules to oblige physicians in private practices to electronically document their prescriptions. This would provide another source of information on prescription loyalty that would facilitate cogent prescription loyalty studies. Also, the results are specific to the Indian context, where the rules and regulations of the government and drug control authorities, the industry and private physician practices as well as health insurance are different from other countries. Future research on prescription loyalty could be undertaken with the factors specific to the chosen country's context, which would possibly provide different orientations to prescription loyalty studies. Nevertheless, despite the limitations, this paper provides a different perspective to prescription behavior research and should contribute to the growing body of knowledge on the role of prescription loyalty behavior of physicians, thus broadening the scope of further research on prescription loyalty.

Conclusions
While most of the research on prescription behavior has focused on momentary prescription decisions only (a transactional perspective), this study provides a different orientation to prescription behavior studies, by focusing on continuity in prescription decisions (a relational perspective). Our empirical investigation of prescription loyalty in India and the findings, specifically on tangible rewards and professional influence, contribute to an improvement in the marketing practices of the pharmaceutical industry enabling it to optimize marketing expenditures that build the prescription loyalty of their physicians. The findings of the study imply that public policy makers should take prescription loyalty behavior seriously and conduct prescription loyalty behavior studies at regular intervals, so as to specifically understand the impact of tangible rewards and control unethical practices by both physicians and pharmaceutical companies. Finally, the study provides a different perspective for future research on prescription behavior, by including various country-specific contextual factors.

Notes
1. Keller (2008, p. 109) defines point of parity factor as a factor, “which is not necessarily unique but may be in fact shared amongst all competing brands”.
2. Keller (2008, p.107) defines point of difference factor as a factor, “that is strongly associated by consumers to a particular brand and that they could not find this factor to the same extent with all other competing brands”.
3. Consumers International (CI) is the world federation of consumer groups that, working together with its members, serves as the only independent and authoritative global voice for consumers’ (Source: www.consumersinternational.org).

References


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