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DETERMINANTS TOWARDS DOCTORS' PRESCRIBING INTENTION OF BRANDED MEDICINES: A CASE OF ANTIBIOTICS IN THE SRI LANKAN PHARMACEUTICAL INDUSTRY

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Abstract

Restrictions on Promoting, Advertising and Sales along with differences in perception on branded and generic medicines have made pharmaceutical market a unique marketplace. In Sri Lanka, the situation is more complicated as most of the Allopathic Medicines are considered 'Prescription only'. Hence, there is a concern whether there could be a competitive advantage in branding of pharmaceuticals in Sri Lanka. However, the world Pharmaceutical Market has increasingly come to understand the importance of Pharmaceutical Branding. Doctors have been identified as the most influential group for customers' purchase decision of a particular brand of medicine. In Sri Lanka, only few studies have been specifically dedicated to pharmaceutical marketing and to the authors' knowledge, little research has explored doctors' prescribing intention of branded medicines. The overall objective of this study was therefore to examine the determinants towards doctors' prescribing intention of branded medicines (Antibiotics) in Sri Lanka. Quantitative data was collected by means of a survey questionnaire administered to a representative sample of 120 MBBS qualified doctors in District of Colombo, Sri Lanka. Inferential statistics revealed that Brand Loyalty and Quality of the Medicine are the factors having a strong effect on Doctors' Prescribing Intention of Branded Medicines in Sri Lanka. Demographic profile of doctors' shows significant impact on prescribing intention. Affordability to the Patient and Customer Relationship Management (CRM) of the Pharmaceutical Company are not significant in Sri Lankan context. These insights will help pharmaceutical marketers to develop better pharmaceutical marketing strategies and policy makers to develop measures to achieve better clinical effectiveness with economic efficiency in prescribing medicines in Sri Lanka.

Keywords: Branding, Loyalty, Prescribing Intention, Pharmaceutical Industry, Sri Lanka

Introduction

Background of the Study

The pharmaceutical industry introduced branding comparatively late. During the 1980's and 1990's the pharmaceutical industry enjoyed success over an extended period of time. Strong research and development (R&D), aggressive defense of patents and use of the dominant promotional tool were some of the key success factors of the industry. Therefore, the industry had been product and R&D driven but not market driven.

However, in early 2000's the picture had changed. Many of the blockbuster products had gone off-patent and generic competitors entered into the market and the industry had increasingly realized the importance of building strong brands due to increasing costs of R&D and the generic competition after patent expiration. On the other hand, one of the major problems faced by pharmaceutical companies in brand building is, the rivalry amongst generic competitors with low price 'Branded Generics' after the patent expiry.

Pharmaceutical industry differs from Fast Moving Consumer Goods (FMCG) industry in many aspects. They are mainly, restrictions in advertising, generic competition after the expiration of the patents and the unique characteristics in the target market. Further, Pharmaceutical industry is one of the most regulated industries in the world. When considering the Sri Lankan context, there are restrictions on Advertising and Sale of most of the medicines.

Doctors have been identified as the major influencing group on medicine purchase decisions of patients (consumers) due to their roles as influencers, gatekeepers, deciders, while patients perform the role of buyers and users. In this context, the pharmaceutical market is heavily dependent on the doctors' prescribing behavior. Hence, doctors' prescribing behavior of a particular brand is a key influencing factor for a consumer to purchase such brands.

Problem Statement

Considering the above identified importance, the lack of academic research on pharmaceutical branding (Griffiths 2008) and, to the authors' knowledge, little research that has explored doctors' prescribing intention of branded medicines in Sri Lanka. The present study aimed at studying the determinants towards doctors prescribing intention of branded medicines in Sri Lanka.

Objectives of the Study

As per the above problem statement, the objectives of the study were to identify the determinants towards Doctor's Prescribing Intention of Branded Medicines, examine the influence of each determinant and to explain the influence of type of medical institute /hospital, where doctors are practicing, on Doctor's Prescribing Intention in the Sri Lankan context.

Literature Review

Prescribing Intention of Doctors

Kapferer (1997) (as cited in Schuiling and Moss 2004) has stated that the Pharmaceutical companies develop molecules but what doctors prescribe is brands and the brand has an existence in both doctors and patients minds that goes beyond the product itself. It is important to study doctors' prescribing intention as they are previously identified as the strongest influencing group, vice versa. Because the brands will also have a stronger influence on the behavior and attitudes of patients and doctors (Schuiling and Moss, 2004). This represents an insurmountable difference versus FMCG which are contrary to what certain authors highlight. Doctors can be convinced by arguments rather than purely being

rational. Doctors are also influenced by other factors such as trust or the quality image of the manufacturer. Also, they need to be reassured. Sometimes, the doctors make decisions for emotional reasons which are not rational based on limited information (Chandler & Owen 2002 as cited in Schuiling and Moss 2004, p.13).

Nayak (2013) found evidence of branding and/or habit persistence for specific antimicrobial drugs. For example, the combination drug sulfamethoxazole-trimethoprim is almost always prescribed by physicians as either Septra or Bactrim (brand-names), while amoxicillin is mostly prescribed as the generic. Howard in 1997 (cited in Nayak, 2013) has found that specialists are actually significantly more likely than non-specialists to prescribe antimicrobial drugs in their generic form, possibly indicative that specialists are more aware of the efficacy and existence of generics, resulting in greater generic prescribing.

The elements for which a physician prescribes the generics that are very complex to model can be influenced by a number of characteristics inclusive of patient characteristics, physician characteristics, drug specific characteristics, the way the physician gets information about drugs, financial incentives the physicians may experience, regional preferences, to state laws regulating generic substitution and direct-to-physician advertising. Nayak (2013) has developed a model to describe prescribing intention. According to his view, the patient's preference for a prescription of a generic or brand-name form of a drug is basically determined by the quality and cost differences between the generic and the brand. Therefore, assuming the generic has a cost (CG), which is less than the cost of the brand-name (CB), the patient would choose to have the brand-name prescribed only if the brand had a higher quality value (QB), over the quality value of the generic (QG), that is; $QB - QG > CB - CG$ (Nayak, 2013, p.11) Furthermore, Nayak (2013) stated as physicians and patients do not know the quality of the generic relative to the brands of the same drug. Hence, there is a cost to determine the quality of the generic and a rational consumer would choose to have the generic form of the drug prescribed if $QG - QB > CB - CG + CI$ (Nayak, 2013, p.12).

CI is information cost, can also be considered as a switching cost and means that a price differential between the brand and generic of same quality can persist for a given drug. This switching cost is a function time. If the patient gets utility from buying the brand-name version of the drug then, essentially the patient has a willingness to pay premium for the brand-name form. Under perfect agency, physician characteristics should not influence generic prescribing habits (Nayak, 2013).

Doctors' Prescribing intention can be explained by Theory of Planned Behavior (TPB) and Theory of Reasoned Action. According to Knabe (2012), the Theory of Reasoned Action suggests that a person's behavior is determined by the intention of that person to perform the behavior and that this intention is, in turn, a function of the person's attitude towards the behavior and the person's subjective norm. The best predictor of behavior is intention. Intention is the cognitive representation of a person's readiness to perform a given behavior, and it has been considered to be the immediate precursor of behavior.

The intention is determined by three things; Attitude towards the specific behavior, Subjective norms and Perceived behavioral control. The theory of planned

behavior says that only specific attitudes towards the behavior in question can be expected to predict that behavior. In addition to measuring attitudes towards the behavior, it is also needed to measure people's subjective norms, their beliefs about how people they care about will view the behavior in question. To predict a person's intentions, knowing these beliefs can be as important as knowing the person's attitudes. Finally, perceived behavioral control influences the intention. Perceived behavioral control refers to someone's perceptions of their ability to perform a given behavior. These predictors lead to intention. A general rule, the more favorable the attitude and the subjective norm, and the higher the perceived control the stronger should be the person's intention to perform the behavior in question. (Knabe, 2012)

Prescribing intention of a particular brand of medicine can be either a planned behavior due to their attitudes towards branded medicines. For example, even if the doctors want to prescribe a high quality branded drug to their patients, it cannot be done due to the patients' incapacity to afford it. Therefore, the doctors are compelled to prescribe a generic or a brand in consideration the patient's affordability.

On the other hand, some doctors probably may want to prescribe a certain brand of medicine but, they are forced to prescribe a generic version with regard to some of the institutional norms. That includes the theory of reasoned action. Therefore, it is obvious that, sometimes the doctors have to behave against their attitudinal will owing to various reasons. Accordingly, the necessity arises to study their intention rather than their attitudes.

Determinants towards Doctors' Prescribing Intention

Brand loyalty of patients is a powerful tool to influence not only medical practitioners but also in the development of pharmaceutical brands (Griffiths, 2008). The reason for practitioners to prescribe more expensive branded medicines rather than inexpensive generic alternatives is due to brand loyalty (Griffiths, 2008).

A study done by Ahmed et al.,(2013) in Bangladesh highlights that doctors' preferences are not fully unbiased and can be influenced by pharmaceutical companies. Khajuria, and Khajuria (2013), have undertaken a study with the aim to elucidate the detailed impact of various marketing promotional strategies on physician drug prescription. They stated that, a large number of pharmaceutical companies market same drug molecule with their different brand names in India. This situation invites competition amongst pharmaceutical manufacturers and they influence the prescribing physician by adopting different marketing strategies.

Table 1: Determinants towards Doctors' Prescribing Intention

Determinant	Reference
Brand Loyalty	Du Plooy (2012); El-Dahiyat and Kayyali (2013); Griffiths (2008); Kohli and Buller (2013); Praestegaard (2010),
Affordability to the Patient	El-Dahiyat and Kayyali (2013); Kumar et al. (2015); Martín (2009); Nayak (2013); Suplet, Suárez and Lewek, Smigielski, and Kardas (2015); Theodorou et al. (2009)

Quality of the Medicine	Dunne et al. (2014); Inamdar and Kolhatkar (2013); Kumar et al. (2015); Lewek, Smigielski, and Kardas (2015); Lira et al.(2014); Narendran & Narendranathan (2013); Shafi (2014); Shrank et al. (2011)
CRM of the Pharmaceutical Company	Ahmed et. al,(2013); Chavan (2012); Khajuria and Khajuria (2013); Masroujeh (2009), Nyagonde (2003)
Type of Practicing Medical Institute of the Doctor	Shrank et al. (2011)

According to Lewek, Smigielski, and Kardas (2015); Nayak (2013); Theodorou et al. (2009) doctors are concerned on the affordability of their patients at the time of prescribing. Doctors tend to prescribe quality medicinal products because of their high efficacy (Inamdar and Kolhatkar, 2013). Shrank et al.,(2011) stated that there is an impact of doctors' practicing medical institute on their prescribing intention. Even though a considerable number of factors have been identified in the literature as determinants towards doctors' prescribing intention of branded medicines, a few factors were chosen as determinants, shown in Table 1, based on empirical evidences, in consideration to Sri Lankan context.

Conceptualization and Hypothesis Development

Conceptual Framework

Based on the literature review, a conceptual model was developed as shown in Figure 1. The conceptual model indicates that there are positive relationships between independent variables and the dependent variable. The conceptual framework is a linear model depicting relationship between the independent and dependent variables. Brand Loyalty, Affordability to the patient, Quality of the medicine (quality includes safety and efficacy) and Customer Relationship Management of the Pharmaceutical Company were considered to be the independent variables, whereas Prescribing Intention of Doctors was considered as the dependent variable. The type of medical institute of the Doctors were taken as the control variable.

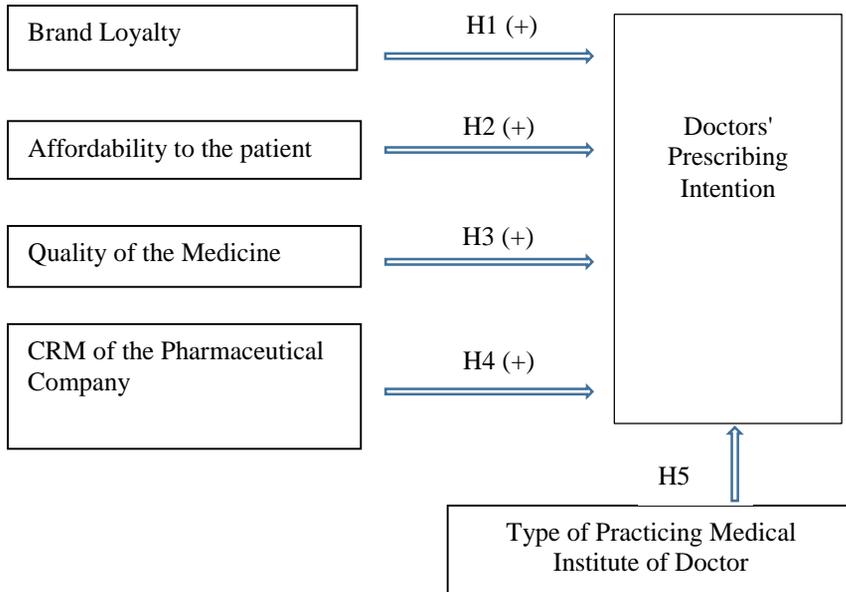


Figure 1. Conceptual framework for the study
Source: Authors developed through literature review

Based on the above literature that supported these expected relationships between the key constructs, the following research hypotheses were formulated.

Hypotheses of the Study

- H1: Brand loyalty of the doctors positively influences their prescribing intention for branded pharmaceuticals.
- H2: Affordability to the patient positively influences doctors' prescribing intention for branded pharmaceuticals.
- H3: Higher Quality of the drug, positively influences doctors' prescribing intention for branded pharmaceuticals.
- H4: Higher CRM of the Pharmaceutical company positively influences doctors' prescribing intention for branded pharmaceuticals.
- H5: Type of medical institute where doctors practice has an effect on prescribing intention of doctors.

Methods

The study was carried out as a questionnaire survey. The items measuring the key constructs consisting of the four independent variables and the dependent variable of the questionnaire were operationalized by adopting items from the past studies. They were measured on a Seven point Likert scale. The brand loyalty of the doctor was measured

using four items consisting of preference for antibiotics brand over generic, well-known brand, brand trust and ethical reputation of the firm (El-Dahiyat and Kayyali, 2013; Kohli and Buller, 2013; Praestegaard, 2010). Affordability to the patient was measured using five items income level of patient, price of the brand, rapid recovery, preference for cheapest brand and assured benefits for money (El-Dahiyat and Kayyali, 2013; Kumar et al., 2015; Suplet et al., 2009). The quality of medicine scale covered four items including quality perception of brands over generics, brands having less side-effects over generics, brands being safer than generics and brands being more effective than generics (Kumar et al., 2011; Lira et al., 2014). CRM of the firm was measured through five items representing information provided through symposia or scientific meetings, valuable information materials, medical reps with up-to-date pharmaceutical knowledge, medical reps' professionalism with rational approach and medical reps' regular visits to introduce new products (Chavan, 2011; Masroujeh, 2009; Nyagonde, 2003). The doctors' prescribing intention was operationalized using eight items consisting of prescribing well-known brands, considering substitutes for current brands, effectiveness of the generics over brand name, brand advertising of the company, seriousness of the disease, patient's preference, brand efficacy and doctor's past experience. (Chavan, 2011; El-Dahiyat and Kayyali, 2013; Kumar et al., 2015; Lira et al., 2014; Praestegaard, 2010). The control variable as the type of medical institute was measured as a nominal categorical variable. For this the Category of the medical institute/institutes the doctors were working for, recorded as Teaching or General Hospital + Private practice, Base Hospital + Private Practice or Private hospital or Clinic (Shrank et al., 2011).

The elements of the population were comprised of any MBBS qualified doctor who is either a consultant or a general practitioner, of all age categories, both genders, and working for either public sector, but doing private practice or private sector hospitals. Empirical scope of the study has been narrowed down to the District of Colombo, Sri Lanka. Sample size of this study was 120 doctors from the District of Colombo. The sample of 120 doctors consists of 60 doctors who are employed in the Government Sector and at the same time practicing in the Private Sector hospitals, and another 60 doctors purely practicing only in the private hospitals. This is because the majority of the doctors practicing in the Private Sector hospitals are the government employed doctors. Because of unavailability of the suitable sampling frame and other practical difficulties, judgmental sampling method was used for collecting data.

Eighty four (84) questionnaires were collected out of one hundred and twenty (120) questionnaires distributed. Therefore, the response rate is recorded as 70%. The adequacy of the sample size was determined based on the rules of thumb proposed by Roscoe (1975 as cited in Sekaran, 2006). Accordingly, the sample size should preferably be 10 times or more of the number of variables in the study and minimum number should be 60. In this study, there are six (6) sets of variables in the conceptual model to measure the intended relationships, accordingly, 84 questionnaire were adequate for testing the hypotheses using multiple linear regression procedure.

Results and Discussion

Reliability and Validity

According to Sekaran (2006, p.307) the Cronbach's alpha coefficient indicates how items in a data set are positively correlated with each other. Closer the reliability reaches 1.0, better the reliability and validity. Generally, a level below 0.6 is considered to be poor in reliability and those which reach 0.7 and above are acceptable. Table 2 shows the Reliability Statistics for variables after improving Cronbach's Alpha values by deleting a few poor items in some variables. According to Cronbach's alpha values, all variables are reliable. Further, the content validity was assured as the items were adopted from the established literature whilst a factor analysis was undertaken to make convergence validity and unidimensionality of the items measuring each construct.

Table 2: Reliability Statistics after improved Alpha value by deleting effected items

Variable	Cronbach's Alpha	Number of Items
Brand Loyalty (BL)	.787	3
Affordability to the Patient (A-to -P)	.617	4
Quality of the Medicine (QoM)	.920	4
CRM of the Pharmaceutical Company	.775	6
Prescribing Intention (PI)	.781	12

Descriptive Analysis

Each indicator statement in the questionnaire is measured on a 1-7 Likert scale. On the scale, level 7 indicates the highest agreement to the given statement while 1 is for the lowest. Neutral point of the Likert scale is 4. Table 3 shows the Descriptive statistical analysis, performed to describe the present level of intensity of each determinant. This clearly shows that mean values of all independent variables are very closer or a little higher than the neutral point, whereas the value of the dependent variable is a little lower. Affordability to the patient has relatively high mean value than other independent variables. Also, values of the independent variables have not reached "somewhat agree" level (5). This implies that Brand Loyalty, Affordability to the patient, Quality of the medicine and CRM of the Pharmaceutical Company are the factors considered to some extent when prescribing an antibiotic. The mean value which is higher than the neutral point describes positive answers. However, we can conclude that doctors are inclined for brands than generics in Sri Lankan context while affordability is concerned more important than the other variables.

Both brand loyalty and quality of the medicine show the minimum response of 1 and maximum response of 7. Hence, it seems that some respondents are of the opinion that shows "strongly disagree"- level 1 whereas; others are of the opinion that shows "strongly agree"- level 7. But, it seems that the responses for Affordability to the patient, and CRM

of the Pharmaceutical Company, are not much varied from the highest to lowest levels of the Likert scale but, varying around the neutral point. Minimum value for the CRM of the Pharmaceutical Company is 2.17. Therefore, respondents generally do not “strongly disagree” for items in the relevant data set. Responses for prescribing intention are varying between 1.83 and 6.75.

Table 3: Descriptive Statistics new variables

Variable	Mean	Std. Deviation	Minimum	Maximum
Brand Loyalty (BL)	4.34	1.57	1.00	7.00
Affordability to Patient (A-to-P)	4.94	1.09	1.50	6.50
Quality of Medicine (QoM)	4.10	1.49	1.00	7.00
Customer Relationship Management (CRM)	4.64	1.04	2.17	6.67
Prescribing Intention (PI)	3.87	0.88	1.83	6.75

Table 4 depicts the association between the independent variables and the dependent variable. All independent variables are correlated with dependent variables at 0.01 significant levels while CRM of the Pharmaceutical Company is correlated at 0.05, which is a significant level. Association between the dependent and independent variables are statistically significant as all significance values are below 0.05. The highest correlation of 0.477 lies between BL (Brand loyalty) and PI (Prescribing Intention) at 0.01, which is a significant level. On the other hand, BL and the A-to-P (Affordability to the Patient) has a weak positive association. BL and the QoM (Quality of the Medicine) has also a weak positive association

Regression Analysis

R^2 in Table 5 describes the proportion of variance in the dependent variable, explained by the variance in the independent variables in the overall model, which is 0.315. Therefore, the independent variables altogether explain 31.5% of variance of the dependent variable. According to the ANOVA table (Table 6) the overall model is significant. Table 7 shows positive Beta values for all the independent variables that indicates the positive relationship towards with the dependent variable.

Table 4: Correlation Between Independent Variables and the Dependent Variable

		BL	A-to-P	QoM	CRM	PI
BL	Pearson Correlation	1	.324**	.316**	.136	.477**
	Sig. (2-tailed)		.003	.003	.217	.000
A-to-P	Pearson Correlation	.324**	1	.355**	.408**	.313**
	Sig. (2-tailed)	.003		.001	.000	.004
QoM	Pearson Correlation	.316**	.355**	1	.251*	.406**
	Sig. (2-tailed)	.003	.001		.021	.000
CRM	Pearson Correlation	.136	.408**	.251*	1	.225*
	Sig. (2-tailed)	.217	.000	.021		.040
PI	Pearson Correlation	.477**	.313**	.406**	.225*	1
	Sig. (2-tailed)	.000	.004	.000	.040	

**Correlation is significant at the 0.01 level (2-tailed).

Correlation is significant at the 0.05 level (2-tailed)

Table 5: Model Summary

Model	R	R ²	Adjusted R ²	Std. Error of the Estimate	Durbin-Watson
1	.561 ^a	.315	.280	.74442	1.725

Table 6: Analysis of Variance (ANOVA)

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	20.103	4	5.026	9.069	.000 ^b
Residual	43.779	79	.554		
Total	63.882	83			

The significance value of the relationship between Brand loyalty and Prescribing Intention is 0.001, which is less than 0.05. Therefore, the null hypothesis of H1 is rejected with 95% level of confidence. According to Du Plooy (2012); El-Dahiyat and Kayyali (2013); Griffiths (2008); Kohli and Buller (2013); Praestegaard (2010), the positive relationship between brand loyalty of the doctors and their prescribing intention is consistent in the Sri Lankan context. Significance value of the relationship between Quality of the Medicine and Prescribing Intention is 0.02 which is less than 0.05. Therefore, the null hypothesis of H3 is rejected with 95% level of confidence. According to Dunne et al. (2014); Inamdar and Kolhatkar (2013); Kumar et al. (2015); Lewek, Smigielski, and Kardas (2015); Lira et al. (2014); Narendran and Narendranathan, (2013); Shafi (2014); Shrank et al. (2011), the positive relationship between quality of the medicine and doctors' prescribing intention is acceptable in the Sri Lankan context.

Null hypothesis of H2 and H4 are not rejected as the corresponding significant values were greater than 0.05. Therefore, according to El-Dahiyat and Kayyali (2013); Kumar et al. (2015); Lewek, Smigielski and Kardas (2015); Nayak (2013); Suplet et al. (2009); Theodorou et al. (2009), absence of the positive relationship between the Affordability to the Patient and doctors' prescribing intention is inconsistent with the previous findings. At the same time, absence of the positive relationship between CRM of Pharmaceutical Company and Doctors' prescribing intention according to Ahmed et. al.(2013); Chavan (2011); Khajuria and Khajuria (2013); Masroujeh (2009); Nyagonde (2003), is found to be inconsistent. On the other hand, according to the Beta values, all independent variables show weak positive relationships with the dependent variable.

Table 7: Regression Coefficient Table

	B	Std. Error	Beta	t	Sig.	VIF
1 (Const)	1.786	.460		3.886	.000	
Brand Loyalty	.203	.056	.364	3.601	.001	1.178
Affordability	.059	.088	.074	.678	.500	1.380
Quality	.143	.061	.244	2.366	.020	1.227
CRM	.070	.086	.084	.813	.419	1.219

Effect of Medical Institute of the Doctors

Table 8 shows that there is a significant difference in opinions among some groups of doctors by Medical Institute to which they are attached. Table of Multiple Comparison (Table 9) shows that there is a significant difference in opinions of the doctors working for Government Teaching/General Hospitals with private practice (Category 1) comparably to the doctors practicing in Provincial / Base Hospitals with private practice (Category 2). It is evident that the doctors practicing in Provincial / Base Hospitals with private practice have more intention to prescribe branded medicine than those who work for Government Teaching /General Hospitals with private practice. Therefore it is clear that there is an effect of the type of hospital on Doctors' Prescribing Intention in Sri Lankan context. This finding is consistent with Shrank et al. (2011).

Table 8: ANOVA for Mean Differences by Medical Institute

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	5.879	2	2.939	4.105	.020
Within Groups	58.003	81	.716		
Total	63.882	83			

Table 9: Multiple Comparisons for Medical Institute attached as Control Variable

(I) MI	(J) MI	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1	2	-.61621*	.22071	.018	-1.1432	-.0893
	3	-.34439	.25644	.376	-.9567	.2679
2	1	.61621*	.22071	.018	.0893	1.1432
	3	.27183	.29197	.622	-.4253	.9689

*. The mean difference is significant at the 0.05 level.

Conclusion, Implications and Further Research

In the Sri Lankan context, the doctors are inclined to branded medicines than the generic alternatives. Brand Loyalty is a factor that commonly affect doctors' prescribing intention, out of the four factors that have been selected as the independent variables. The second factor, which has a strong effect, is Quality of the Medicine. Presumably, the doctors' perception is that the branded medicines are of higher quality than the generics. At the same time, mean value for questions on quality of the medicine is a little above the neutral point. It shows that the doctors do not perceive all brands are high in quality, safety and efficacy. This model accounts for only 31.5% of the total variance of the dependent variable. Therefore it can be concluded that the Sri Lankan doctors tend to prescribe branded medicines due to some other determinants which have not been studied in this conceptual model.

The mean values of both sets of questions for Affordability to the Patient and CRM of the company are also a little higher than the neutral point. On the other hand, these factors show the highest mean values among independent variables. Also, it is observed that Brand Loyalty shows a positive association with Patients' Affordability. Accordingly, Patients' Affordability might have direct influence on brand loyalty. As a result of this, it is suspicious whether Affordability to the Patient might have an indirect impact on Doctors' Prescribing Intention. But, Brand Loyalty may be overriding the effect of Patients' Affordability on Prescribing Intention in the selected model. Furthermore, it can be suspected whether doctors are concerned to some extent on their patients' affordability, along with the medicinal product quality. Accordingly, we can assume that, the doctors might not always go for the innovative product and can be satisfied with a branded generic having acceptable quality with a reasonable price. Interestingly, a significant difference on the prescribing intention of branded medicines can be seen between the doctors involved in working at Teaching/General Hospitals with private practice and the doctors involved in working at Provincial Hospitals with private practice. This could be due to the differences of patient profile.

The findings have implications for pharmaceutical marketers in Sri Lanka. With special reference to antibiotic products, developing and marketing a pharmaceutical brand

is still worthier than marketing a generic product in the Sri Lankan context although there are restrictions for marketing and issues related to patent licenses. Recommendations can be brought about for pharmaceutical industry decision makers to enhance the competitiveness of companies based on above findings, which can include developing pharmaceutical brands, improving the quality of the product and highlighting the quality related information in promotional activities. This can also imply the need for local pharmaceutical manufacturers to develop brands together with quality perception targeting doctors. This needs brands to create trust and emotional bonding with doctors and promote brands with help of opinion leaders in the health care sector in Sri Lanka. Besides, if quality can be brought into generic drugs and offered at a reasonable price, doctors may be influenced to prescribe them. Accordingly, health expenditure of the country can be reduced. Therefore, Sri Lankan policy makers can use the findings of this research to develop measures to achieve better clinical effectiveness and economic efficiency in drug prescribing.

Finally, the current study has some limitations in the areas of randomness of the sample and its size in drawing conclusions to the population of the study. It has also selected only five factors that can affect doctors' prescribing intention of antibiotics. Additionally, the study mainly depends on quantitative and survey research method which inhibits generating fresh insights into the sector. Thus, it is possible to undertake further research in the same area. The future studies can use a more representative random sample of doctors. Further, it is possible to identify and incorporate more independent variables in the model which can have a significant effect on prescribing intention of the doctors compared to what is included in the current study. This is initially possible by employing a qualitative in-depth interviews with doctors to identify some other important variables and then incorporate in the conceptual model for later investigating their effect through quantitative surveys. Furthermore, the suggested indirect impact of the Affordability to the patient on Prescribing Intention can be conceptualized and tested by arguing Brand Loyalty as a mediator in Sri Lankan context.

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