AN INVESTIGATION OF WILLINGNESS TO BUY GENERIC PRESCRIPTION MEDICINES IN AUSTRALIA

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ABSTRACT

This paper investigates consumer perception on prescription generic medicines (PGM) in Australia. Specifically, it examines how consumer concern and consumer knowledge about counterfeit medicines influence attitudes towards generic prescription medicine and willingness to pay more for branded prescription medicines. Data were collected using mail surveys to reach mature age population and 281 usable responses were used for analysis. The consumer concern was found to be significant predictor of attitude and willingness to pay more for branded prescription medicines but consumer knowledge is an insignificant predictor. Implications of the study and the corresponding recommendations are presented and discussed.

INTRODUCTION

The World Health Organization (WHO) estimates that up to 60% of drugs in some developing countries and up to 20% in some developed countries are counterfeits (Liang, 2006; WHO, 2010). More than 50 percent of medicines that purchased from Internet are counterfeit and some researchers suggest that currently 60 percent of online products are counterfeit or substandard (Howard, 2010). While there are many studies done in this area (e.g. Moken, 2003; Liang, 2006; Lybecker, 2007), there is a dearth of research from the consumers perspective (Bian and Veloutsou, 2007; Staake, Thiesse, and Fleisch, 2009; Veloutsou and Bian, 2008). There are two overarching issues with respect to counterfeit drugs globally. First, consumers "unknowingly" purchase deceptive counterfeit drugs (Bloch et al., 1993; Liang, 2006). These can be defined as drugs sold as pharmaceutical company brand name drugs, usually at a much lower price. These drugs may (a) contain a lesser amount of the real drug's active ingredient (b) contain no active ingredient at all (c) compose of substances varying from talcum power to aspirin to poison (d) blatantly mimic the real drug, inclusive of the manufacturer's labels, pamphlets, and purity seals but are in fact fakes (Moken, 2003). Second, consumers are confused if "generic brands" of drugs are in fact counterfeits (d'Astous and Gargouri, 2001; Lybecker, 2008). As such, the growing consumer concern and the lack of consumer knowledge have led to less than favourable attitudes towards counterfeiting (Bang et al., 2000; Liang, 2006;

Marcketti and Shelley, 2009).. In the context of this study, consumers in Australia also have the same issues with respect to counterfeit medicines as well.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

To begin with, most generic medicine literatures only focus on general practitioners or pharmacists perception (Hassali, Kong, and Stewart, 2006; Hassali, Shafie, and Awaisu, 2010) but little research has done in consumer perception. Specifically, there is no study of consumer perspective in Australia about generic medicine. This gap can be considered to be done in this study to understand more consumer perception in generic medicine in Australia. Consumers have confused about the difference between generic medicine and counterfeit medicine that lead consumer willingly to pay more for genuine medicine in the market (d'Astous and Gargouri, 2001; Lybecker, 2008). Most of consumer perception studies about generic medicines are done in qualitative studies (Sharrad and Hassali, 2010; Chua, Hassali, Shafie, and Awaisu 2010). Therefore, empirical study will be considered in this study to analyze consumer perception by using research model to explain the causal relationship among all variables in the research model.

Consumer concern - When consumers believe that there is a certain problem and they are concerned, they are more likely to adopt to consumer behaviour practices to assuage or solve the problem (Hines et al., 1986; Marcketti and Shelley, 2009). It was found that the greater the knowledge and concern about issues within the industry, it was related to greater support for more socially responsible businesses (Dickson, 2000). Consumer concern in the counterfeiting context examines consumer concerns regarding labelling, the legitimateness of the supplier, the source of drug production, the country of origin, contamination of drugs, cost, penalties of being caught possessing counterfeit drugs, health risks, drug policy and regulations and effects of purchasing counterfeit prescription medicines (Moken, 2003; Liang, 2006). Therefore, it can be proposed that;

H1a*: Consumer concern about counterfeit medicine has a positive influence on the attitude towards generic prescription medicine.*

H1b*: Consumer concern about counterfeit medicine has a positive influence on the willingness to pay more for trade name (branded) prescription medicines.*

Consumer Knowledge - The term is the cognitive representation of product-related experience in a consumer's memory, which takes the form of a product schema and is likely to contain knowledge in the form of coded representations of brands, product attributes, usage situations, general product class information, and evaluation and choice rules (Maheswaran, 1994; Marcketti and Shelley, 2009). Farhar (1996) states that consumer perceptions and preferences about the environment are influenced by both factual and faulty information. If consumers are more knowledgeable, they will have information that would better assist them in making their decisions. More knowledgeable consumers are also more willing to pay a higher price (Bang et al., 2000). In the context of TRA, it makes sense that heightened knowledge about counterfeit medicine would lead to stronger beliefs about the positive consequence or benefits of generic prescription medicine.

H2a*: There is a positive relationship between consumer knowledge about counterfeit medicines and attitude towards generic prescription medicines.*
H2b*: There is a positive relationship between consumer knowledge about counterfeit medicines and willingness to pay more for trade name (branded) prescription medicines.*

Attitudes towards generic prescription medicines (GPM) - Attitude towards the behaviour is stronger than attitudes towards an object as it will result in higher likelihood of purchasing. Attitudes are beliefs and perceptions of consumers. Some of the common beliefs and concerns about GPM are the quality and functionality aspects, the social consequences, and the legality of generic prescription medicines. The TRA proposes that attitudes towards a behavior are influenced by beliefs that the behavior leads to significant consequences. In this context of study, consumers with strong concern of positive consequence to not purchase counterfeit medicines were significantly more likely to indicate they would be willing to pay more to purchase trade name (branded) medicines (Bang et al., 2000).
H3*: There is a positive relationship between attitudes towards generic prescription medicines and willingness to pay more for trade name (branded) prescription medicines.*

Willingness to pay more for branded prescription medicines - The more that the consumer knows about the advantages of branded prescription medicines, they are more likely to pay more for it (Bang et al., 2000). The willingness to pay more is a relevant measure and reflects the attitude towards the behaviour of consuming generic prescription medicines. If consumers have stronger beliefs about the positive consequences of purchasing genuine prescription medicines, they will have a higher willingness to pay more for the genuine prescription medicines. Higher willingness to pay more for genuine prescription medicines will also lead to higher likelihood to not purchase generic prescription medicines from a legitimate drug store or from the Internet.

H4a*: Willingness to pay more for trade name prescription medicines has a positive influence to the likelihood to not purchase generic prescription medicines from a legitimate drug store.*

H4b*: Willingness to pay more for trade name (branded) prescription medicines has a positive influence to the likelihood to not purchase generic prescription medicines from the Internet.*

Consumer trust in internet shopping - Trust can be defined as a set of specific relationship intention dealing primarily with integrity, benevolence, competence, and predictability of an Internet online retailer (Gefen, Karahanna, and Straub, 2003). Previous studies have shown that consumer generally will avoid shopping online if the online retailers cannot be trusted (Gefen, 2000; Jarvenpaa and Tractinsky, 1999). There is no study about consumer trust to purchase GPM in internet shopping that moderate willingness to pay more for trade name (branded) prescription medicines and the likelihood to not purchase generic prescription medicines from the Internet.

H5*: Consumer trusts in internet shopping is a moderation variable between willingness to pay more for purchase genuine prescription medicines and the likelihood for a consumer not to purchase generic prescription medicines from the Internet.*

METHODOLOGY

A mail survey through systematic sampling from the white pages was used to capture the targeted sample population of consumers in Australia nationwide who consume or purchase generic prescription medicines, hence achieving ecological validity (Cowan, 1989; Hornik and Ellis, 1988). The survey form consists of a number of sections comprising establishing scales on consumer concern, consumer knowledge, attitude towards PGM, willingness to pay more for branded prescription medicine, consumer trust in internet shopping, and likelihood to purchase branded prescription medicines from legitimate or drug store (from Marcketti and Shelley, 2009; Wang et al., 2005; Cheung and Lee, 2001). All items were measured on a seven-point Likert scale. 281 usable responses (12.8% response rate) were used in the analysis. The sample consisted of slightly more males (51.2%) than females. The majority of respondents were aged 46 and above (68.3%) and 71.5 percent of respondents are medicine users.

RESULT AND ANALYSIS

An exploratory factor analysis was conducted on all variables in the study and it shows that there is no overlapping among all variables except attitude towards PGM. Therefore, factor analysis was conducted again on the original 8-items "Attitudes towards generic prescription medicines" scale to found out the 2 dimension factors. Two factors emerged from Varimax rotation and were named "social consequence" and "subjective judgement". For subsequent SEM analysis to be valid, the measurement model (CFA) must be estimated first. The results of CFA estimation has shown that all items are loaded significantly ($P<0.001$) on each factor. All direct effect estimates are positive. Most squared multiple correlations are at least 0.30. These measurement model results establish divergent validity of the underlying constructs and establish an essential pre-condition for the validity of subsequent structural model estimation. Structural Equation Modelling (SEM) was conducted to test the model fit for the research model. After some adjustments to the model, the model (Figure 1) can be considered as good model fit (χ^2 (57) = 123.346, p = .000, CMIN/df= 2.164), other indicators such as RMSEA = .064, GFI = .938, AGFI = .901, TLI = .966 and CFI = .975 are within the recommended fit level. From SEM result, hypothesis 1b and 4a are accepted. Conversely, hypothesis 1a, 2a, 2b, 3, 4b, and 5 are rejected.

Multi group analysis (moderation test) was conducted to test the difference between two groups ("under 56" (N=148) vs "56 and above"(N=133)) in the model. The general model for moderation test is a good fit (χ^2 = 184.6, df = 92, p = .000, RMSEA = 0.060, GFI = 0.903, TLI = 0.951, CFI = 0.966). The constrained model with all the three regression weights restricted as being equal across the two groups also seemed to provide a good fit to the data (χ^2 = 277.898, df = 97, p = .000, RMSEA = 0.076, TLI = 0.910, and CFI = 0.934 are in recommended level of fit (Hu and Bentler, 1999)). The $\Delta\chi^2$ is 93.3 which is significantly higher than critical value at .05 level (Critical value = 11.07). Therefore, age group ("Under 56" vs "56 and above") is a significant moderator. The results show there is no significant moderating effect of "under 56" vs "56 and above" on the link between concern and attitude, attitude and willingness, and concern and willingness. Hence, "under 56" vs "56 and above" does not appear to moderate those relationship between concern, attitude and attitude and willingness, and concern and willingness.

Multi group analysis (moderation test) was conducted to test the difference between "medicine users" (N= 201) and "non medicine users" (N= 80) in the model. The general model for mediation test is a good fit (χ^2 = 187.738, df = 92, p = .000, RMSEA = 0.062, GFI = 0.903, TLI = 0.948, and CFI = 0.964). The constrained model with all the three regression weights restricted as being equal across the two groups also seemed to provide a good fit to the data (χ^2 = 287.913, df = 97, p = .000, RMSEA = 0.078, TLI = 0.904, and CFI = 0.930 (Hu and Bentler, 1999). The $\Delta\chi^2$is 100.2 which is significantly higher than critical value at .05 level (Critical value = 11.07). Therefore, users vs non-users is a significant moderator. Based on the results, users vs non-users appears to moderate those relationship between concern and attitude and attitude and willingness but not the link between concern and willingness. Mediation test was conducted to test the relationship between concern (IV) and willingness (DV), concern (IV) and attitude (MV), and attitude (MV) – willingness (DV) which are all significant. The fit measures for the structural model showed satisfactory values (χ^2 = 116.235, df = 46, p = .000, RMSEA = 0.074, GFI = 0.937, TLI = 0.962 and CFI = 0.973) (Hu and Bentler, 1999). The $\Delta\chi^2$ (before and after mediating effect) is 49.8 which is significantly higher than critical value at .05 level (Critical value = 27.59). Therefore, it can be argued that the condition for mediation is supported. The direct effects between concern and willingness (β = .433, p<.01) still

have significant result ($\beta = .378$, $p<.01$) after the mediating variables are included in the model, thus lending support to partial mediation effects.

DISCUSSION AND IMPLICATION

The results show that consumer concern about counterfeit medicines has negative influence with attitude towards PGM but positive influence with willingness to pay more for branded prescription medicines. Therefore, marketing and business practitioners must reduce consumer concern by giving education (i.e. education campaign or online learning service) to consumers about the difference between generic medicines and counterfeit medicines. The policy makers also need to ensure the regulatory system for prescription medicines especially generic medicines can be trusted for safety reason and maintain the quality standard.

Further, findings also show that attitude towards PGM has negative influence with willingness to pay more for branded prescription medicines. Therefore, generic medicine industry should maintain their good image when consumers have trust to purchase their generic products and increase awareness of generic products to new target consumers by using education advertising through media.

Another finding shows that willingness to pay more for trade name (branded) prescription medicines has a positive influence to the likelihood to not purchase generic prescription medicines from a legitimate drug store. Therefore, government and business practitioners should consider selling generic and branded medicines in legitimate drug store as consumers feel safer to purchase it rather than from the Internet shopping

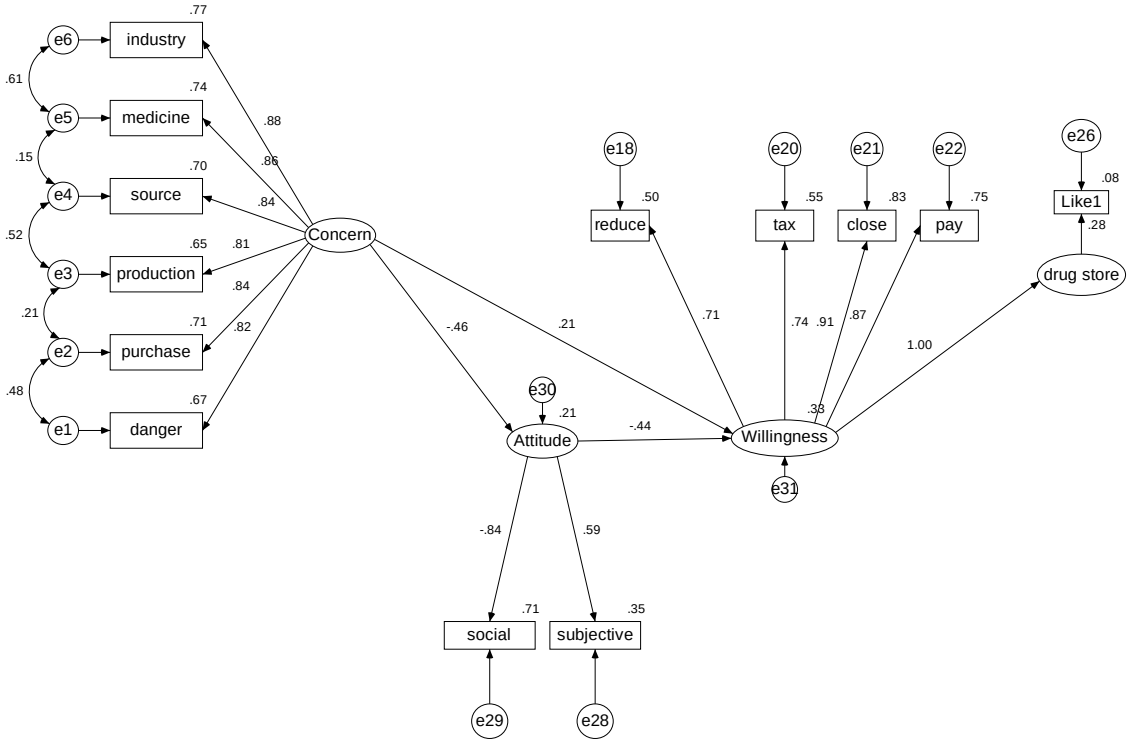
The findings from moderation test indicates that business practitioners should target non-users group and “under 56” group as their new target market by using education advertising or education campaign to reduce their concern about counterfeit medicines and know the difference between generic medicines and counterfeit medicines.

The result from mediation test shows that government and business practitioners should reduce consumers concern about coun1terfeit medicines to attract them to purchase generic prescription medicines by implementing education campaign in the public to increase consumer awareness in generic medicine.

CONCLUDING COMMENTS

It was found that consumer concern is a strong predictor of attitude towards PGM and willingness to pay more for branded prescription medicines. Other future directions can include a cross cultural comparison between a developed and developing country as to whether there are varying levels of knowledge and concern about counterfeit medicines. The sample size for this study can also be expanded to provide different demographic groups.

Figure 1: Final SEM Model



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