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The Integration of Knowledge and Theory of Planned Behavior towards Purchase Intention among Consumers

Mohd Redhuan Dzulkipli*, Siti Noorsuriani Maon & Annurizal Anuar
Universiti Teknologi MARA, Malaysia
*redhuan49@uitm.edu.my

Abstract: Considering the rising cost of medicine in Malaysia, it is crucial to investigate the behavioral factors that influence the intent of consumers when selecting medicines. Thus, the main objective of this paper is to examine the influence of the Theory of Planned Behavior (TPB) and respondents' knowledge on their intentions to purchase either generic or brand-name medicines. A cross-sectional survey research design was used in this study, involving consumers in various community areas in Selangor. Using a convenience sampling approach, a total of 444 respondents participated in this study. More than half of the respondents were female (63%) and Malay (73%). In regression analysis, the results showed that knowledge ($p < 0.001$) and perceived behavioral control ($p < 0.001$) were statistically significant for purchase intention toward generic and brand medicine. Though statistically significant, only 19% and 29% (knowledge and perceived behavioral control) of the respondents showed intention to purchase the generic medicine while a higher percentage of the respondents showed agreement to their purchase intention with 27% and 45% of the same variables for the purchase intention to the brand medicine. Knowledge and perceived behavioral control were found to be predictors of respondents' intentions to purchase either generic or brand-name medicines. Apart from that, the perceived capacity to purchase is one of the factors that determine consumers' purchase intent. The people's awareness of the similarity between brand-name medicines needs to be increased, as well an individual's ability to pay for the medicine should be explored in future research.

Keywords: *Purchase Intention, Knowledge, Attitude, Subjective Norm, Perceived Behavioral Control, Generic and Brand-name Medicine.*

1. Introduction and Background

Malaysia has spent more than MYR2 billion to cover the cost of medicines supplied through the free-to-all policy of drug distribution in the public healthcare sector, and this is increasing every year (Ministry of Health Malaysia, 2022). There are two types of drugs available, which are brand-name medicine which is the drug that is first produced by the pharmaceutical company and is also called an innovator's brand medicine generic medicine is produced by other pharmaceutical companies after the patent of the drug has ended. Normally the price of the innovator's brand-name medicine tends to be higher than the generic medicine. As for the ratio between generic and brand medicine available in Malaysia, more generic medicine could be found in the public healthcare sector (74.8%) as compared to the private healthcare facility that preferred to offer branded drugs (52.2%) rather than generic medicine (Ministry of Health Malaysia, 2018, 2022).

Furthermore, the unregulated price of medicine in the private sector has created a huge gap in price differences between generic and branded drugs in Malaysia (Ibrahim & Bahri, 2022). As a result, the price of medicine in the private healthcare sector tends to be higher than the public procurement price which further burdens the patient seeking healthcare services in the private healthcare setting (Hassali et al., 2015). To further describe the situation, in a study among community pharmacies, there was a variation of pricing between innovator's brand medicine and generic medicine with differences of more than 90% (Shafie & Hassali, 2008). To this extent, the price of more generic medicine produced in Malaysia was found to be higher than the foreign product. Due to this, the price of drugs offered in the private healthcare setting tends to be higher than the normal price, which indirectly causes the price to spike due to excessive profit-making activity in the private healthcare sector (Zin et al., 2020).

Next, from a bioequivalence and safety perspective, there were no differences between generic and brand-name medicines. A meta-analysis study of cardiovascular disease drugs found that both generic and branded drugs were clinically equivalent and effective in managing cardiovascular diseases (Manzoli et al., 2016). Another study using United States Insurance Data Claim concurred with earlier findings, which suggested equivalence in clinical outcomes between generic medicine and branded medicine (Desai et al., 2019).

To counter the escalating price of medicine in Malaysia, it is vital to examine the behavioral factors influencing the consumer's decision of the type of medicine of their choice. There were few kinds of literature covering various applications of TPB towards behavioral intention such as complementary and alternative medicine, health insurance counter drugs (Dzulkipli et al., 2019; Dzulkipli et al., 2017; Jinnah et al., 2020), only A few of them utilize TPB and knowledge factor towards generic and brand-name medicine purchase intention, especially in Malaysia. Therefore, this study intends to examine the influence of the Theory of Planned Behavior and respondents' knowledge of generic and brand-name medicine purchase intention.

2. Literature Review

Ajzen's Theory of Planned Behavior (TPB) is a widely recognized framework for predicting deliberate human behavior, with success in various domains, such as medical practitioners promoting healthier behaviors (Ajzen, 1991; Montano & Kasprzyk, 2008). It posits that intentions shape an individual's behavioral outcomes, with attitudes, subjective norms, and perceived behavioral control playing crucial roles.

It is widely recognized as a highly influential framework for predicting intentional human behavior. According to Godin, Bélanger-Gravel, Eccles, and Grimshaw (2008), the utilization of this approach has been extensively employed and proven effective in forecasting significant clinical behaviors, specifically the actions taken by medical practitioners to modify the health behaviors of their patients. Though been reviewed and criticized by many, TPB continues to provide a whole framework for research understanding, especially in the social science area (Bosnjak et al., 2020).

Attitudes affect an individual's evaluative stance towards a behavior, while subjective norms evaluate its acceptability or unacceptability by social sphere members. Perceived behavioral control assesses an individual's ability to engage in a specific behavior, and self-efficacy plays a crucial role in this process (Montano & Kasprzyk, 2008; Siuki et al., 2019). In essence, the TPB offers a conceptual framework that facilitates comprehension of the cognitive processes involved in decision-making about behavior engagement. Consequently, it serves as a valuable instrument for predicting and fostering deliberate human behavior.

The implementation of generic medicines has shown variations between countries, with the United States adopting them in 1984 and Italy in 1996 as well as Malaysia where, generic medicines are approximately 20-90% cheaper than brand-name innovator products (Wong et al., 2014). The global generic medicine market witnessed substantial growth, registering a compound annual growth rate (CAGR) of 8.7% from 2016 to 2020. Prominent players in this market, such as Mylan, Teva, Novartis, and Sun Pharmaceutical, collectively hold a 35% market share. Ascertaining consumer attitudes and intentions is of utmost importance for companies and public health policies and strategies (Arcaro et al., 2021).

A study by Straka, Keohane, & Liu, (2017) found that perceptions of risk associated with generic medicines among physicians and patients, wherein they often perceive generic alternatives as potentially less safe or effective than brand name options. They revealed reservations about generic medicines in both groups, primarily stemming from concerns regarding safety and efficacy, leading to hesitancy in opting for generic medications over brand-name ones.

Given that patients are the ultimate end-users of these medications, the acceptance of generic medicines holds critical significance. To promote patients' acceptance and effective utilization of generic medicines, it becomes imperative to equip them with adequate knowledge about these medications and cultivate positive perceptions towards them. Thus, findings based on research carried out in Malaysia revealed that a mere 50% of the patients demonstrated familiarity with the concept of "generic medicine," while approximately 50% of them harbored unfavorable perceptions towards generic medicines. Furthermore, a considerable proportion of patients exhibited a lack of knowledge about the similarities and distinctions between generic and branded pharmaceuticals (Wong et al., 2014). In addition, another study found that patients attending the outpatient pharmacy had mixed beliefs about the efficacy of generic medicines and were relatively neutral about the similarities of generic drugs compared to branded products (Hong et al., 2018). Age, gender, ethnicity, and education level were shown to be affecting respondent's perception of generic medicines. Apart

from the demographic influence on the purchase intention, it was stated that the role of the pharmacist is also important in determining the consumer intention to the types of medicine (Hajleh et al., 2021).

In Saudi Arabia, a separate investigation showed that a significant majority of physicians (71.9%) considered the perceived clinical effectiveness of medications as the primary factor influencing their inclination to prescribe brand-name medicines (Salhia et al., 2015). This indicates their belief that brand-name medicines are more effective for patient treatment compared to locally available generic alternatives. The study emphasized the substantial impact of safety and efficacy perceptions on the decision-making process when choosing between generic and brand-name medications, revealing variations in these perceptions among both physicians and patients.

Nevertheless, the discussion of this study revolved around the consumer's purchase intention for generic and brand-name medicine. It was stated that the consumer's purchase intention was influenced by attitude and the individual's behavior (Arcaro et al., 2021). In a study on generic drug purchase intention in Malaysia, it was found that perceived risk influences consumer intention (Sin & Ismail, 2021). In another study at a pharmacy in Thailand, it was found that, apart from the price of the medicine, recommendations from next of kin and closest friends contribute to the consumer's purchase intention (Bootsumran et al., 2021). A full-fledged application of the TPB towards purchase intention study found that all three elements of the theory namely attitude, subjective norm and perceived behavioral control, significantly correlate with the consumer's purchase intention of generic drugs (Malathi & Mohamed Jasim). Further on, knowledge is also one of the important components that trigger the purchase intention. A study in a Southern Brazilian city found that knowledge is associated with the consumer's purchase intention for generic drugs (Guttier et al., 2017). However, it is worth noting that trust is essential in determining consumer purchase intention regardless of the type of the drugs whether it is generic or brand-name medicine. The view is supported by research findings among Lebanese adults, which, among others, cite the effectiveness, quality, and side effects of generic medicine as compared to branded medicine (Hatem et al., 2023).

Given this context, it becomes crucial to comprehend individuals' behavioral factors and purchase intentions toward generic medicines and brand-name medicines. Acquiring valuable insights in these areas can effectively shape future public policies, education, and practical interventions to maximize the use of generic medicines. By using these insights, strategies can be developed to encourage widespread acceptance and usage of generic medications, while also addressing concerns related to safety and efficacy perceptions.

3. Research Methodology

A cross-sectional survey research design was used in this study, involving consumers in various community areas in Selangor. About 384 sample size was determined using prevalence sample size calculation as suggested (Naing et al., 2006; Naing, 2003). Nevertheless, as many as 500 questionnaires were distributed to the potential respondents with a return rate of 88% (444 samples). Using the TPB and knowledge constructs, the questionnaire is primarily designed to predict intention to purchase brand-name and generic medicines to evaluate the research objective. The questionnaire was comprised of four sections: (a) the demographic characteristics of consumers; (b) accessing their knowledge of generic and brand-name medicines; (c) their influence on the Theory of Planned Behavior; and (d) the purchasing intention of generic and brand-name medicines. A five-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree) was used. A total of 444 respondents took part in completing the survey using a convenience sampling approach. Participation was voluntary and anonymous.

A STATA statistical software version 14.2 was used to test the association between the independent and dependent variables. Both descriptive and inferential statistics were applied. Simple frequencies and cross-tabulation were carried out to study the characteristics of the respondents. Multivariate regression analyses were performed to examine which constructs predicted the intentions of respondents to purchase generic and brand-name medicines.

4. Results

Table 1 depicts the demographic profile of the respondents. Most of the respondents were aged 29 years old and below (70%), remaining 12.5% of the respondents were aged 41 years old and above. Female respondents dominated the survey at 63% leaving the male respondents at only 37% of the total participants. Malay were the most respondents who participated in the study (73%), followed by Chinese and Indian ethnicity at 13% and 14% respectively.

Table 1: Demographic Profiles of the Respondents (N=444)

Characteristics	
Age, n (%)	
Below 29 years old	310(70)
30 – 40 years old	78(17.6)
41 – 50 years old	50 (11.3)
51 years old and above	6 (1.4)
Gender, n (%)	
Male	164 (37)
Female	280(63)
Ethnicity	
Malay	324 (73)
Chinese	58 (13)
Indian	62 (14)
Marital status, n (%)	
Single	306 (69)
Married	130 (29)
Divorced	8 (2)
Education, n (%)	
Certificate	76 (17)
Diploma	158 (36)
Undergraduate	172 (39)
Postgraduate	38 (8)
Household Size, n (%)	
1 people	132 (30)
2 people	68 (15.3)
3 people	92 (20.7)
4 people	58 (13)
More than 5 people	94 (21.2)
Monthly Income, n (%)	
Below MYR2,500	276 (62)
MYR2,501 – MYR3,500	100 (23)
MYR3,501 – MYR4,500	42 (9)
MYR4,501 – MYR5,500	16 (4)
More than MYR5,501	10 (2)

Since the majority of the respondents were aged below 29 years old and above, we can see that, the majority of the respondents were single (69%) leaving the remaining 29% and 2% of the respondents were married and divorced. For the education level of the respondents, most of them reported of having at least an Undergraduate Degree (39%) in their life followed by a Diploma (36%). Only 17% and 8% of the respondents reported having a Certificate and Postgraduate degree. In addition to that, about 21.2% of the respondents reported having more than 5 people in their household size, followed by 20.7% of the respondents who reported having 3 people in the household. Lastly, most of the respondent reported having less than MYR2,500 per month as their monthly household income.

Table 2: Descriptive Analysis

Variables	Mean	SD	Cronbach Alpha	Skewness	Kurtosis
Knowledge	3.4042	0.4790	0.8124	0.2135	0.0564
Attitude	3.1903	0.5682	0.8132	0.2076	0.8539
Subjective Norm	3.2873	0.6947	0.8180	0.0008	0.0251
Perceived Behavioral Control	3.4000	0.6075	0.7700	0.2883	0.0069
Intention to Purchase Generic Medicine	3.4489	0.5138	0.8053	0.2464	0.0003
Intention to Purchase Brand-name Medicine	3.4729	0.5891	0.7951	0.0043	0.0013

To examine the reliability of the test items, a reliability analysis was conducted to examine the intercorrelation of the items tested in the survey. The results shown in Table 2 were within the acceptable range suggested by literature reviews (Heo et al., 2015; Tavakol & Dennick, 2011). Furthermore, for the normality distribution of the data, a simple normality test of skewness and kurtosis was performed on the data. The findings were normal data as suggested by Hair et Al. which is within +2 and -2 (Hair et al., 2010).

Table 3: Association of TPB and Intention to Purchase Generic Medicine

Variables	Coefficient	Standard Error	t	P value	95% CI
Knowledge	0.1912	0.0516	3.70	<0.001*	0.0896 - 0.2928
Attitude	0.0125	0.0472	0.27	0.790	-0.0802 - 0.1054
Subjective Norm	0.0649	0.0362	1.79	0.073	-0.0061 - 0.1361
Perceived Behavioral Control	0.2960	0.1674	5.99	<0.001*	0.1989 - 0.3932

*(*P < 0.001, Adjusted R2 = 0.2732)*

Tables 3 and 4 represent the relationship between the theory of planned behavior and the intention to purchase generic and brand-name medicine among respondents. Table 3 shows that knowledge (coef. 0.1912, p = <0.001) and perceived behavioral control (coef. 0.2960, p = <0.001) and Table 4 shows that knowledge (coef. 0.2752, p = <0.001) and perceived behavioral control (coef. 0.4531, p = <0.001), which are statistically significant for purchase intention towards generic and brand-name medicine respectively.

Table 4: Association of TPB and Intention to Purchase Brand-Name Medicine

Variables	Coefficient	Standard Error	t	P value	95% CI
Knowledge	0.2752	0.0550	4.99	<0.001*	0.1669 - 0.3835
Attitude	0.4020	0.0503	0.80	0.425	-0.0587 - 0.1391
Subjective Norm	-0.0383	0.3860	-0.99	0.321	-0.1142 - 0.0375
Perceived Behavioral Control	0.4531	0.5270	8.6	<0.001*	0.3495 - 0.5567

*(*P < 0.001, Adjusted R2 = 0.3717)*

Though statistically significant, only 19% and 29% (knowledge and perceived behavioral control) of the respondents show intention to purchase the generic medicine while a higher percentage of the respondents show agreement to their purchase intention with 27% and 45% of the same variables for the purchase intention to the brand-name medicine.

Discussion: For the demographic distribution of the respondents, the result showed a balanced and to the current statistics of Malaysia's population census especially ethnicity, gender and education (Department of Statistics Malaysia, 2022). However, it is worth noting that, the majority of the respondents reported having a monthly income of less than MYR5,000 which may indicate lower socioeconomic status especially if they reside in the urban areas (Munisamy et al., 2022). This is worrying if the spending in the household is meant

to exceed 10% of the monthly household income, It is said that the particular individual or household is experiencing a financial catastrophe which may deprive them of having proper access to the medication required for the treatment of their disease (Wagstaff et al., 2007).

For the association of the TPB and purchase intention, only knowledge and perceived behavioral control were found to correlate with the consumer purchase intention towards both generic and brand-name medicine. The findings were contradicted by the previous study which found that all three variables of TPB correlated with the consumer purchase intention (Malathi & Mohamed Jasim). As the perceived behavioral control is interpreted as an individual perceived view of their ability in terms of money, determination, and motivation (Dzulkipli et al., 2019; Dzulkipli et al., 2017), it is worth noting that consumer is making a fair judgment of their ability to pay for the type of medicine that they will purchase. Since the price of the brand-name medicine is commonly known as higher than the generic medicine, the consumer tends to purchase the cheaper option (Shafie & Hassali, 2008; Wong et al., 2014). The finding is supported by past findings which noted price plays a major role in determining consumer purchase intention (Bootsumran et al., 2021; Hatem et al., 2023). Last but not least for the knowledge about the medicine itself, the finding is consistent with the past study which supported it as part of the vital component contributing to the consumer purchase intention (Guttier et al., 2017). This warrants more effort to educate consumers about generic and brand-name medicine thus providing indirect regulation through informed purchase by the consumer in the market thus lowering the price gap between generic and branded medicine in Malaysia.

5. Managerial Implications and Recommendations

The present study provides hindsight of what attracts the consumer to generic medicine. As most consumers tend to have original brand drugs for their prescription, the quality and effectiveness of the generic medicines are on par and bio-equivalent to the brand-name medicine. What differentiates the two types of drugs is price. Generic medicines can be found at cheaper prices as compared to the original brand drugs. Over time, this will educate the consumer to prefer the generic over the brand-name medicine and put pressure on the market to lower the price of the brand-name medicine. Therefore, it provides consumers with a healthy, better selection and fair prices of medicine selection nationwide.

Conclusion: The study identified knowledge and perceived behavioral control as predictors of the purchase intention of both generic and brand medicine among respondents. The findings provide hindsight as to how an individual's knowledge of the medicine's details is important to make the purchase intention. Increased awareness and knowledge among consumers may result in better and more informed consumers in medical decision-making that is effective and fair price which resulted in cost savings in managing consumer health (Kohli & Buller, 2013). In addition, the perceived ability to purchase is one of the criteria in determining the purchase intention among consumers. Awareness of the true information about generic and brand-name medicine should also be promoted to increase consumer knowledge. Apart from that, an individual's ability to pay from a monetary perspective should also be explored to gauge their financial ability to pay to fund their medical needs. Future research shall explore the generic medicine's prescribing pattern by healthcare professionals as well as the pharmacist's readiness to suggest the availability of generic medicine to the consumer. This effort is expected to increase the use and prescription of generic medicine in both public and private healthcare facilities in Malaysia.

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