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Predicting Customer Engagement of Private Hospital: A Case Study in Malaysia

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ABSTRACT – This study investigates customer engagement (CE) in private hospitals in Malaysia, focusing on medical and health insurance in the context of the post-COVID-19 environment. Employing the Health Belief Model (HBM) as a theoretical foundation, the research aims to predict CE based on various perceptions. Utilizing variance-based structural equation modeling with Smart PLS 4.0, data was collected from 150 respondents who are private hospital customers. The findings reveal that perceived susceptibility (PS), does not significantly influence CE. However, significant relationships were identified between perceived severity (PI), perceived benefits (PA), and perceived barriers (PB) on CE. These results highlight the importance of emphasizing the severity of health issues and the benefits of medical insurance while addressing barriers to engagement. The implications for hospital management include developing targeted communication strategies that enhance patient understanding and minimize perceived obstacles, ultimately fostering greater CE and loyalty in a competitive healthcare landscape.

KEYWORDS: Customer Engagement, Perceived Susceptibility, Predictive Severity, Perceived Benefits, Perceived Barriers

1.0 Introduction

Customer engagement (CE) has become increasingly important in the Medical and Health Insurance (MHI) sector, especially following the COVID-19 pandemic. In this industry, maintaining meaningful and continuous interaction with customers is crucial to understanding their needs and influencing their decisions [1]. The pandemic caused disruptions that affected customers' willingness to purchase or continue insurance plans, leading to shifts in engagement patterns [2]. CE is defined as an ongoing relationship between businesses and customers, where engaged customers are more likely to remain loyal, make repeat purchases, and positively promote the company [3]. Therefore, higher levels of customer engagement contribute significantly to value creation and long-term organizational sustainability.

2.0 Background of the Study

CE has gained significant attention in marketing research over the past decade due to its role in strengthening customer relationships and sustaining competitive advantage [4]. CE contributes to improved business performance by supporting revenue growth, expanding market share, and enhancing profitability [5]. Within the Malaysian Medical and Health Insurance (MHI) sector, CE is particularly important as the government aimed to increase insurance and takaful penetration rates to 75% by 2020 [6]. However, this target was not achieved, with only 54% of Malaysians insured in 2019 [7]. The situation deteriorated further during the COVID-19 pandemic, when approximately 7.7% of policyholders deferred premium payments, resulting in more than RM1 billion in delayed contributions [8]. These trends suggest a reliance on government- subsidized healthcare and highlight challenges in fostering sustained engagement within the MHI sector [9]. While trust has been widely acknowledged as an important factor influencing CE [10], the role of perceived risk (PR) remains less explored, particularly in the context of MHI. Existing studies have primarily examined service quality, cost efficiency, customer satisfaction, and performance, rather than how customers' perceived risks influence their engagement behaviors [11].

To address this gap, this study applies the Health Belief Model (HBM) to explore how personal perceptions and beliefs such as perceived risk shape CE in MHI. The HBM is appropriate as it explains how individuals assess risks and benefits before engaging in health-related decisions, including insurance participation and commitment [12].

3.0 Literature Review

3.1 MHI and issue on CE

MHI refers to an agreement in which an insurer provides financial protection for medical expenses, hospitalization, and healthcare services in the event of illness or accident [13]. Historically, MHI evolved from disability insurance during the nineteenth century, where individuals initially paid medical expenses entirely out-of-pocket. Over time, disability-based protection expanded into modern health insurance, now covering preventive care, emergency services, and prescription treatments [14]. The development of MHI can be traced back to the United States in 1850, where the first insurance company covered accident-related injuries [15]. This was followed by Germany's social insurance system in 1883, requiring workers to contribute to sickness funds that provided healthcare and wage compensation [16]. Other nations soon adopted similar systems, and various insurance products were later introduced to protect individuals from critical illness, hospitalization costs, and financial losses due to health risks [9].

MHI penetration has grown steadily in developed markets such as the United States, Switzerland, Denmark, Germany, Canada, and Taiwan, where insurance spending remains high and penetration rates are stable. For instance, advanced markets recorded an average insurance spending of USD 4664 per capita and a penetration rate of 9.6% in 2019 [17]. However, despite these stable indicators, many countries face declining customer engagement (CE) and increasing numbers of uninsured individuals. In the United States, the uninsured non-elderly population decreased from 48 million in 2010 to 28 million in 2016, only to rise again to 30 million in 2020 [18]. This trend suggests that customers disengage from insurance participation and rely more on out-of-pocket payments or government- supported healthcare.

The effects of insufficient engagement with health insurance extend beyond financial risks. Rising healthcare costs increase patients' vulnerability to catastrophic medical expenditure and place additional strain on national healthcare systems [19]. Lack of insurance affects not only individual wellbeing, employment, and stability, but also broader economic productivity and healthcare system efficiency [20]. Recognizing these challenges, numerous studies have explored the determinants of CE in MHI. Pricing remains a key factor influencing insurance demand; higher premiums can discourage engagement. Additionally, demographic variables such as age, gender, income, and education level significantly shape attitudes toward insurance participation [21]. Misunderstanding of insurance benefits also contributes to disengagement among potential consumers [22].

Overall, research demonstrates that CE in MHI is essential not only for individual financial protection but also for organizational outcomes such as sales growth, market share, and profitability [5]. Low engagement has broad economic consequences, including reduced workforce productivity, increased healthcare system burden, and rising poverty due to catastrophic medical costs [22]. Thus, strengthening CE in MHI remains a critical area of concern for policymakers, insurers, and society at large.

3.2 HBM and Hypotheses development

3.2.1 Perceived Susceptibility (PS)

One of the HBM variables known as perceived susceptibility is particularly important for predicting behavior. Perceived susceptibility predicted preventive health behavior more

accurately than sick-role behavior [23]. People's perceptions of their personal susceptibility to illness or disease vary widely [24]. According to Karimy et al. [25], the following elements influence health-related behaviors: knowledge, attitudes, and beliefs regarding alternative activities; perceived vulnerability and psychological obstacles to action; self-efficacy; and interpersonal factors.

Even though there are a lot of empirical studies and findings regarding perceived susceptibility and its relationship with belief and behavior, the HBM construct primarily gives another dimension. According to Rosenstock et al. [26], an individual is more likely to engage in certain behaviors if she or he perceives vulnerability to a health problem, perceives the impact of the health problem will be severe, perceives the target behavior will benefit the individual by reducing the appearance of health problems, and perceives the barriers to adopting the target behavior are quite low. In other words, perceived susceptibility has a significant impact on an individual's attitude toward health insurance engagement. Brahmana et al. [27] indicated that when individuals are exposed to danger, their susceptibility to acquiring insurance increases. This means that the more people perceive the value of health insurance, the greater their intention to purchase insurance. Similarly, Luquis & Kensinger [28] supports the notion that when individuals perceive themselves to be vulnerable to bad health outcomes and have access to health care coverage, they will seek out preventative care treatments to protect themselves. As a result of differences of opinion among researchers regarding the effect of perceived susceptibility to CE behavior and belief, the following study hypotheses were developed:

H1: PS is positively related to CE towards MHI.

3.2.2 Perceived Severity (PI)

Perceived severity is an HBM construct that is frequently found to be highly correlated with perceived susceptibility. Perceived severity refers to an individual's perceptions about the seriousness of the disease and the potential health consequences of infection [29]. Additionally, perceived severity is defined as an individual's perception of the seriousness of an illness or its consequences if left untreated, which may include both medical and clinical consequences (such as death, disability, and pain) and possible social consequences (effects of the conditions on work, family life, and social relations) [30]. According to Chin & Mansori [31], the more severe a person's view of an unfavorable health outcome, the more motivated her or he is to act in ways to avoid that outcome.

Overall, perceived severity was the least predictive factor, but it was strongly associated with sick-role behavior [23]. Recognize the significance and limitations of the severity construct (HBM) in predicting CE behaviors and beliefs about MHI, and because perceived severity refers to the effect or consequences of a disease on an individual, which can include disability, long-term medication and mental illness, financial difficulties, and even death [31]. Customers who perceive their health problems as significant are more likely to seek insurance coverage in order to avoid or lessen the severity of their condition, according to the literature. A person who believes a health consequence will have a negligible effect on his or her life will be unmotivated to take preventative action [32]. As a result, the following hypothesis is developed to determine whether there is relationship between perceived severity and CE with the MHI:

H2: PI is positively related to CE towards MHI.

3.2.3 Perceived Benefits (PA)

Perceived benefits are a construct in the HBM that refers to an individual's perceptions of the benefit and efficacy of engaging in a health behavior, in this example, engaging in health insurance [12]. In other words, perceived benefits refer to an individual's valuation acquired by engaging in desirable behavior [33]. Additionally, if the individual believes that he or she would benefit from the outcome expectation, they will most likely engage in the recommended behavior [34].

Furthermore, Abraham and Sheeran [35] indicated that perceived benefit and barriers were the biggest predictors of all outcomes in reviews and meta-analyses, regardless of moderator variables. Munro et al. [36] revealed that perceived benefits influence perceptions of a behavior's effectiveness, increasing the likelihood of engaging in suggested health behaviors. Although a perceived threat may stimulate one to take action to minimize it, the choice of which action to take is subject to the perceived benefit of taking it. Benefits are also measured against perceived barriers, such as the possibility that an action may be costly, harmful, unpleasant, or inconvenient [37]. Benefits and barriers are likely to predict behavior more accurately when the objective is to prevent a negative health result rather than determine whether participants will adhere to a treatment programmed for an existing ailment. It arises in the insurance scenario when, despite the undeniable benefits of insurance in terms of mitigating the impact of loss, especially financial impact, CE a challenge, since some people opt to stay uninsured. This finding contradicts Janz and Becker's [30] finding that this moderator has no influence on barriers and that treatment studies would demonstrate a greater effect. Measures of outcome behavior reveal that perceived benefits and perceived barriers have a larger effect size on preventive health behavior than on treatment behavior [32]. Thus, to test the relationship between perceived benefits and CE towards MHI, the hypothesis is conducted as below:

H3: PA is positively related to CE towards MHI.

3.2.4 Perceived Barriers (PB)

From the four main variables of HBM, perceived barriers were found to be the most important predictor of health behavior in all reviews and meta-analyses, even when other factors were taken into account [38]. According to Karen Glanz and Barbara K. Rimer [23], perceived barriers were the most powerful single predictor across all studies and behaviors. Chin and Mansori [31] say that perceived barriers are a person's problems or impediments to doing what they want to do. As a result, the person will think that a certain behavior is bad and will not do it [39].

Reflecting this, there are numerous CE barriers that could contribute to the CE towards MHI. Due to varying levels of knowledge, cultural background, social stigma, and other uncontrollable barriers, some issues are more critical and require urgent attention in order to resolve the engagement problem [40]. According to previous research, perceived barriers may become the primary impediment to individuals adopting any advised action or acquiring MHI. With that being said, if people perceive the barriers as low, it will increase the likelihood of not engaging in insurance and vice versa. Given that, to justify the relationship between perceived barriers and CE towards MHI, the hypothesis is hypothesized as below:

H4: PB are positively related to CE towards MHI.

4.0 Problem Statement

Despite the recognized importance of customer engagement (CE) in sustaining the Medical and Health Insurance (MHI) sector, Malaysia continues to face challenges in achieving a high level of insurance participation. The national target of a 75% penetration rate for life insurance and takaful, including MHI, was not achieved, with only 54% of the population insured in 2019 [7]. The situation worsened during the COVID-19 pandemic, where approximately 7.7% of policyholders deferred premium payments, resulting in a decline in CE and over RM1 billion in postponed contributions [8]. Previous research has largely focused on factors such as service quality, cost, satisfaction, and performance within the insurance sector, but limited empirical studies have examined how perceived risk (PR) influences CE, particularly in the MHI context. While trust has been widely studied as a key factor driving engagement, the role of PR as a potential determinant and mediator of CE remains underexplored [11]. This gap highlights the need to investigate PR within the framework of the Health Belief Model (HBM) to better understand how customers form engagement intentions toward MHI products.

5.0 Research Objectives

The implementation of this study aims to achieve the following objectives:

1. To examine the positive relationship between Perceived Susceptibility (PS), Perceived severity (PI), perceived barriers (PA) and perceived benefits (PB) and CE.

6.0 Significance of the Study

This study is significant as it provides valuable insights into the factors influencing customer engagement (CE) in the context of medical and health insurance (MHI) in private hospitals in Malaysia, particularly in the post-COVID-19 environment. By examining the relationships between perceived susceptibility (PS), perceived severity (PI), perceived barriers (PB), and perceived benefits (PB) on CE, the study contributes to a better understanding of how customer perceptions shape engagement behavior.

The findings of this research can help private hospital management develop targeted strategies to enhance CE by emphasizing the severity of health risks, highlighting the benefits of insurance coverage, and addressing barriers that prevent engagement. This can lead to increased customer loyalty, improved patient satisfaction, and better retention of policyholders. Additionally, the study enriches the theoretical understanding of the Health Belief Model (HBM) in the healthcare insurance context and provides a foundation for future research on behavioral factors affecting CE in Malaysia's healthcare sector.

7.0 Scope of the Study

This study focuses on CE in the context of MHI within private hospitals in Malaysia. The respondents are patients who currently hold or use MHI as a tool to pay for hospital services. A total of 150 respondents from various private hospitals across Malaysia were selected to participate in the study.

Due to the sensitive and confidential nature of patient information and restrictions imposed by government regulations, enumerators were appointed to collect data. This ensured that the study complied with privacy requirements and maintained ethical standards while obtaining reliable responses from hospital patients. The study specifically examines how patient perceptions such as perceived susceptibility, perceived severity, perceived benefits, and perceived barriers affect engagement with MHI, providing insights relevant to private hospital management and policy development.

8.0 Methodology

8.1 Research Design

For this study, surveys were chosen as the data collection strategy. Additionally, a questionnaire survey of customers (private hospital patients) was conducted to examine the relationship between PS, PI, PA, and PB on CE toward MHI. As the issue description emphasized customer engagement, data were gathered from customers of private hospitals listed by the Malaysian Ministry of Health (MOH), which served as the unit of analysis for this research.

8.2 Data collection and Analysis procedure

Customers from any of the 219 Malaysian private hospitals that are listed on the Ministry of Health (MOH) website as of 2022 make up the sampling frame for this study. The respondents of this research were 150 in total. The aim of this study is to gather information via self-administered questionnaire surveys on the selection criteria for CE, and their belief in MHI protection. The researcher uses four predictors as the input parameters for this study. SmartPLS was chosen as a nonparametric multivariate analytic tool for structural equation modeling (SEM) that is variance- based. The data were analyzed with SmartPLS 4.0. The analysis modeled the measurements and design of the study using the two-stage methodology recommended by experts [41].

9.0 Research Findings

9.1 Measurement Model

For this study, a two-step approach was employed to test the developed model, following the recommendations of Anderson and Gerbing [42]. Initially, the validity and reliability of the instruments were assessed using guidelines from Hair et al. [43] and Ramayah et al. [44]. Subsequently, the structural model was analysed to test the proposed hypotheses. In the measurement model, the loadings, average variance extracted (AVE), and composite reliability (CR) were evaluated. The acceptable criteria are that loadings should be ≥0.5, AVE should be ≥0.5, and CR should be ≥0.7. As presented in Table 1, all AVE values exceeded 0.5, and all CR values surpassed 0.7. The loadings were generally acceptable, with only two falling below the 0.708 threshold [43]. Overall, all measurements in this study demonstrated validity and reliability. Then in step 2, the discriminant validity was assessed using the HTMT criterion suggested by Henseler et al. [45] and updated by Franke and Sarstedt [46]. The HTMT values should be ≤ 0.85 the stricter criterion and the mode lenient criterion is it should be ≤ 0.90. As shown in Table 2, the values of HTMT were all lower than the stricter criterion of ≤ 0.85 as such it can be conclude that the respondents understood the 5 constructs are distinct. Taken together both these validity test has shown that the measurement items are both valid and reliable.

Table 1: Measurement Model

First Order Constructs	Items	Loadings	AVE	CR
Perceived Susceptibility	PS1	0.877	0.819	0.937
	PS2	0.894		
	PS33	0.920		
	PS4	0.928		
Perceived Severity	PI1	0.844	0.700	0.865
	PI2	0.842		
	PI3	0.899		
	PI4	0.756		
Perceived Benefits	PA1	0.643	0.628	0.719
	PA2	0.859		
	PA3	0.903		
Perceived Barriers	PB1	0.732	0.560	0.849
	PB2	0.818		
	PB3	0.689		
	PB4	0.757		
	PB5	0.744		
	PB6	0.775		
Customer Engagement	CE1	0.829	0.670	0.917
	CE2	0.875		
	CE3	0.851		

	CE4	0.789
	CE5	0.852
	CE6	0.705

Table 2: Discriminant Validity (HTMT)

	1	2	3	4	5
1. Customer engagement					
2. Perceived benefits	0.664				
3. Perceived barriers	0.482	0.377			
4. Perceived severity	0.337	0.408	0.101		
5.Perceived susceptibility	0.214	0.211	0.110	0.636	

9.2 Structural Model

According to Hair et al. [43] path coefficients, the standard errors, t-values and p- values were reported for the structural model using a 5,000-sample re-sample bootstrapping procedure [44]. Also based on the criticism of Hahn and Ang [47] that p-values are not good criterion for testing the significance of hypothesis and suggested to use a combination of criterions such as p-values, confidence intervals and effect sizes. Table 3 shows the summary of the criterions used to test the hypotheses developed.

First, the effect of the 4 predictors on CE, the R^2 was 0.419 (Q2 = 0.365) which shows that all the 4 predictors explained 41.9% of the variance in CE. Perceived severity (β = 0.147, t> 1.811), Perceived benefits (β = 0.388, t> 5.227) and Perceived barriers (β = - 0.338, t> 4.876), were all positively related to CE, thus H2, H3 and H4 were supported. In contrast for direct effect, rating (β=0.089, t-value=1.278, P>0.01) for PS have shown there are no relationship exists where its shows that hypotheses H1 are not supported.

Table 3: Hypothesis Testing Direct Effects

Hypothesis	Relationship	Std Beta	Std Error	t-values	p-values	BCI LL	BCI UL	f2	VIF
H1	Perceived Susceptibility → CE	0.089	0.070	1.278	0.101	-0.030	0.201	0.009	1.488
H2	Perceived Severity→ CE	0.147	0.081	1.811	0.035	0.024	0.294	0.023	1.622
H3	Perceived Benefits→ CE	0.388	0.074	5.227	0.000	0.255	0.497	0.208	1.243
H4	Perceived Barriers→ CE	-0.338	0.069	4.876	0.000	-0.462	-0.236	0.174	1.131

Note: We use 95% confidence interval with a bootstrapping of 5,000

According to the study's data, PS was not significant to CE towards Medical and health insurance (MHI). This demonstrates that PS is not a good predictor of health behavior, which is CE and it is supported by the study's findings, which reveal that the effect size for PS on CE (f2= 0.009) shows that PS do not affect CE prediction. This result is consistent with most previous studies measuring PS as the weakest predictors of all outcomes in HBM [32], except Zimmerman and Vernberg [48], who reported a very strong effect size of the PS dimension. Studies on HBM have repeatedly proven that individuals will not engage in any preventive health behaviors against a health problem that they believe will not affect them [49]. Nevertheless, an individual is more motivated to perform healthier behaviors when she or he believes they are at risk for certain health problems [32]. This is aligned with Murry [12], who states that a person would need to believe he

or she is susceptible to the illness, or in this case, susceptible to engaging in health insurance and that the occurrence of the illness or need for insurance would have at least some negative impacts on his or her life (severity). However, the findings of this study were different with previous research whereby there are significant relationship exist between PI and CE. Even though most findings for example Sulat et al. [38], who discovered that PI is the weakest variable, but PI is a substantial predictor of sick-role behaviors when compared to other variables. In contrast, severity perception may be less relevant to predicting preventative activities but more appropriate for those diagnosed with a disease and/or experiencing disease symptoms [30]. In addition, the respondents' profiles potentially contributed to the outcome. 45% of the respondents, or most respondents, fell within the age group of 40–51 years. Since most of the population is older and has dealt with illnesses before, they are less likely to seek out information in favor of depending on their own experiences. They may decide to remain uninsured if they have never suffered from a serious disease in the past; nevertheless, if they have a history of paying high medical prices, waiting a long time, or not unmet healthcare needs in a public hospital, they will undoubtedly choose to purchase and engage with MHI.

Yoon et al. [50] found that as people age, their ability to preserve mental energy improves. They rely heavily on heuristics. At the same time, they limit themselves to comprehensive analysis while devising ways to eliminate incompatible possibilities as quickly as possible. Most studies accepted that PA had the most predictive power for health behavior because of its ability to alter perceptions of the effectiveness of behavior, increasing the likelihood of performing recommended health behaviors [51]. Previous research demonstrates that adopting healthy behaviors, like getting insurance, can have a positive impact on preventing the formation of health problems. When customers can acquire the highest level of protection from risks—particularly from illnesses that result in significant medical costs— PA is very helpful to them. If the insurance company can provide a product that meets the customer's needs at an affordable price, this firsthand experience can typically bind the customer to stay engaged with the insurance policy even more. This is demonstrated by the fact that 48% of survey participants in this research had policies in place that were older than nine years, even though 6% of respondents were unemployed. However, because of their PA with MHI, they are willing to engage with MHI.
Hypotheses H4 demonstrated that PB is significant and there is a positive relationship with CE. The finding was aligned with previous studies that stated that of the four main variables of HBM, PB was found to be the most important predictor of health behavior in all reviews and meta-analyses, even when other factors were considered [38]. This means that without any mediator or mediating factor, PB was able to predict health behaviors, and this is supported by Karen Glanz and Barbara K. Rimer [23], who stated PB was the most powerful single predictor.

10.0 Conclusion

The analysis conducted indicates that respondents generally have a high level of awareness about phantom load. Respondents understand what phantom load is, its effects, and the importance of reducing unnecessary power consumption, with most mean scores ranging between 4.01 and 5.00. The overall mean score (M) of 4.27 reflects a good understanding of this concept. In terms of attitude analysis, the overall mean score is 4.23, indicating that respondents have a positive attitude towards managing phantom load. They are concerned about energy wastage due to phantom load and are willing to change their energy usage habits.

The small difference in overall mean scores suggests that the level of awareness and attitudes towards phantom load are almost the same among respondents. This implies that respondents who are aware of phantom load also tend to have a positive attitude towards its management. The standard deviation (SD) for attitude (SD=0.69) is higher than for awareness (SD=0.54). This indicates that while perceptions of phantom load are relatively uniform among all respondents, there is a wide variation in how respondents view and respond to this phenomenon. This may be due to factors such as personal beliefs, experiences, and in-depth knowledge about phantom load management measures derived from these findings.

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