

## Consumer Attitude and Behavior toward Green Hospitals in Thailand

**Hassan Iqbal**

King Mongkut's Institute of  
Technology (KMITL) Ladkrabang

Correspondence:  
[humhib@yahoo.com](mailto:humhib@yahoo.com)

### Abstract

The main objective of this research is to investigate patients' mindsets concerning the emerging green hospitals and the patients' willingness to receive services and pay for them at these hospitals. Using a descriptive correlation survey research design, the study sampled 402 respondents from public (N=201) and private (N=201) hospitals of Thailand. The results suggest that the respondents agree regarding their attitudes, expectations, and perceptions of practices and principles. Moreover, respondents are willing to pay more for green hospital services. Finally, in considering whether there were significant predictors of willingness to pay more for green hospitals, the study found a number of significant variables including gender and various beliefs and attitudinal variables. These results suggest that the theory of planned behavior, describing attitudes, subjective norms, and perceived behavioral controls offers a rational choice model for understanding consumer behavior. Recommendations for additional research and green hospital management are provided.

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**Keywords:** Thailand's Public and Private Hospitals, green hospitals theory of planned behavior, consumer behavior.

### Introduction

In recent years, Thailand's economy has undergone significant development and stabilization, having passed through the difficulties of rapid development during the 1970s and 1980s, the Asian financial crisis in the late 1990s, and the worldwide financial collapse in 2008. It still has a growth level that is among the highest in Asia. Thailand's economy has developed a forward-looking perspective that attempts to manage transitions in an effort to achieve a competitive edge. Thailand managed its transition from an agricultural rural society to an industrialized urban one by developing strategic thinking and a deep appreciation of the linkages between technology, profit, society and policy (Leturque & Wiggins, 2010). As Thailand's political and economic leadership looks to the future with the same attitude of managing change, one of the commonly expressed developmental needs discussed in literature is the need for sustainable development (UNEP, 2010). Green technologies and practices are therefore being weighed across all industrial fronts in Thailand.

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This orientation is exemplified by the "Green and Clean Hospital Project" housed in the nation's Department of Health. Among other things, it is a project designed to "Increase the awareness of the health consequences of climate change within the health sector and in collaboration with other key sectors" (Punpeng, 2010). The program is a representative of the health care sector's efforts to increase environmental accountability to address the need for growth while recognizing the inherent limitations in resources. It shows the efforts of Thailand's health sector to lead green innovations and manage carbon footprints.

The Thailand green hospitals' initiative is driven in part by the vision expressed by the WHO that the health sector can play a leadership role in mitigating the effects of global warming by reducing its carbon footprint (Punpeng, 2010). Thailand's status as an anchor economy in Southeast Asia has, therefore, led to the development of a health care system that is among the regions' finest by embracing new green technologies. The primary concerns include the need to reduce energy usage and waste management, and the need to address Thailand's growing medical health tourism sector.

The question of consumer attitude towards hospitals' environmental practices is important because it implies a market-based imperative toward or away from green technologies. Additionally, it is generally assumed that a community of highly-educated medical and health professionals and scientists, workers and administrators in the health care sector are more likely to have an integral commitment to a balanced coexistence of institution, environment, patient, and public interests. As such, this paper addresses the gap in the research literature around the subject of consumer attitudes toward green hospitals in Thailand.

Currently, there are no studies that have measured consumer attitudes towards green practices in Thailand's hospitals. Additionally, no research has been conducted measuring consumers' willingness to pay for additional costs of green technology. Such findings are necessary for practical policy-making as well as for hospital administrations.

## Goals and Objectives

The research objectives of this study were:

1. To explore consumers' attitudes and behaviors towards perceived areas of green practice in hospitals
2. To investigate consumers' willingness to pay for green hospital services
3. To analyze the role of attitudes, societal norms and perceived behavioral controls leading to the probability that consumers will be receptive to programs promoted by green hospitals.

The study's principal aim was to identify the attitudes and behaviors of consumers regarding "green" health care, and to determine influences that shape the formation of those attitudes and behaviors. In achieving this, it is expected that the research will contribute to managerial understanding and guide future developments of green hospitals. This is in line with Thailand's hospitals transition toward sustainable development practices.

## 1. Review of the Related Literature

Research on the sustainability of tourist management has focused on the development of environmental principles, translated as codes of conduct or environmental policies (United Nations Environment

Program (UNEP), 1994; Williams, 1993). The shift towards green practices in the activities of certain sectors of tourism provide with excellent examples of their application (World Travel & Tourism Council, World Tourism Council, Earth Council, 1995). Hotel sustainability programs have concentrated on waste reduction, energy conservation, and water conservation (WTTERC, 1993).

One of the major environmental issues of today is what to do with the constantly increasing waste that modernization generates, and to determine the extent to which this waste can replace raw and virgin materials (Serpel and Alarcon, 1998). The National Environmental Policy Act (a United States environmental law that established a U.S. national policy promoting the enhancement of the environment) was passed and signed on January 1970 and ushered in an era of concern for the environment. This policy requires businesses and companies to reduce their negative environmental impact and take the responsibility for all prior actions that caused the degradation (Deegan, 2002). The awareness of environmental waste management has been promoted across all industries (Tam & Tam, 2006). The benefits of recycling, as identified by Edwards & Harrison (1999), are: 1) reduction of demand for new and virgin materials; 2) decrease in transportation and production costs, and; 3) utilization of used materials. However, only a few hospitals incorporate recycling in their waste management (Lam, 1988).

Until the 90s, the health care sector showed little concern about being green. Hospitals and other health care provider companies, even with their 'white-gloved' reputation, have been reported as the leading source of dioxin emissions, a type of carcinogen that poses as a hazard to the people (Levin, 2006). Other reports have determined that hospitals are the leading producers of waste. They are also considered one of the biggest consumers of energy (Levin, 2006).

Contrary to the tourism industry, it is widely perceived that hospitals are very resistant to change, both structurally and culturally (Healy, 1998). There is a wide range of studies that prove that there is an

etiological relationship between environmental abuse and diseases (Bresnitz, Beckett, Chan-Yeaun, Craig, Gilman, Harber, *et al.*, 2004). It is solidly argued that an environmental policy could constitute a factor of high-quality care for hospital personnel and patients (Green, Hauser, Calafat, Weuve, Schettlet, Ringer, S., *et al.*, 2005). Furthermore, the apparent increasing difficulty of meeting the growing demand for good hospital care, hospital managers and leaders have turned to Green Hospitals for better outcomes (Harris, 2009; Edwards & Harrison, 1999; Chung, 2009).

A variety of studies have focused on ways on how hospitals have embraced the green revolution. A survey by Health Facilities Management (2008) has explored the reasons why hospitals and other healthcare facilities have decided to be green. The results of the survey showed that the main reason is to lower energy costs (78%), which have led hospitals to being environmentally-friendly.

The WHO (2009) also stresses that hospitals play a great role in being sustainable and protecting the environment and has identified areas where hospitals can take action in order to ensure their sustainability and green commitment. Gul, Ozyaral, and Gul (2008) stated that green hospitals can be categorized into three types depending on the organization that they are affiliated with: US GB's LEED Standards, Green Guide for HealthCare, and Hospitals for a Healthy Environment (H2E).

The healthcare industry is one of the most respected, yet also the largest consumers of energy, water, and other resources. As stated by the WHO, the carbon footprint of the health care industry, even when taking reductions into account, cannot be measured but it still remains substantial (WHO, 2009). There are several benefits from the reducing carbon footprint of a health care facility, such as health co-benefits, economic co-benefits, and social co-benefits. In terms of economic co-benefits, the major benefit consists in lower hospital costs, especially with increasing prices of fossil fuels (WHO, 2009). In terms of social co-benefits, sustainability and green practices within a health care facility allow nurses, practitioners, and doctors to be leaders within their community or agents of change for the green revolution (WHO, 2009).

The major issues that hospitals and other health care provider organizations focused on are the reduction of dioxin emissions (by waste incinerators), and the use of PVC or polyvinyl chloride which may also generate dioxin emissions. Around 4,000 hospitals have pledged to phase out the use of mercury (Levin, 2006). Although hospitals and healthcare facilities are huge producers of waste, there are a many ways to reduce waste, such as the 3Rs: reuse, recycle, and reduce (United States Environmental Protection Agency, 2009; Gaskill, 2006). Williamson (2010) coined the term 'green cleaning' in the process of reducing the carbon footprint and making sure that the facilities are healthy for patients, staff, and the environment. Health care facilities are highly encouraged to be sustainable and to protect the environment without compromising the quality of service they should provide to the clients (Bush, 2008). In terms of water consumption, there is no doubt that health care facilities consume in huge quantities, however, they can reduce it by practicing and monitoring water usage, using efficient water technologies, ensuring that leaks are already repaired, and planting drought-resistant plants (Gleick & Cushing, 2009).

Among the most recommended ways of being green in hospital food consists in using organic food products, and preference of locally-produced food. Milk and meat produced with synthetic hormones should also be avoided (Harvey, 2006, Paren (2009). Bush (2008) states that, as part of the health care industry's commitment to be green and sustainable not only in their infrastructures, many hospitals procure food products from local markets. However, they experience difficulties they cannot increase their hospital prices (Johnson, 2006).

### **Green Medicines**

Many would always say that nature is the best medicine, like natural light as stated by Roger Ulrich, an architecture and professor at Texas A&M University. According to his study, patients with access to natural light, have a shorter length of postoperative hospital stay than those whose rooms overlook a brick wall (Johnson, 2007).

One of the few hospitals which believes in the ability of natural light in helping patients feel better, is the Samaritan Lebanon Community Hospital located in

Oregon. It uses a glass from floor to ceiling to separate the chemotherapy patients' room from an 11,250 square foot Japanese garden. Management of the hospital emphasizes that it would not invest in such infrastructure if not convinced that it is effective (Johnson, 2007).

### **Nursing Practice**

Since the health care sector already embraces the practice of being green and caring for the environment, its success would be impossible without the support and participation of nurses. The green practice within the nursing profession is influenced by Florence Nightingale, who was one of the first nurses to comprehend the relationship between physical health and the environment. She emphasized the need for clean air and water, and as a consequence, she urged nurses to be responsible for keeping the environment healthy in order to promote life progress (Nightingale, 1860). A study by Johnson (2007) also stated that Florence Nightingale was one of the first health care providers determining that natural light is therapeutic, second to fresh air. Hence, nurses can help hospitals to be committed to sustainability and the practice of being green.

### **Consumer Attitudes and Behaviors**

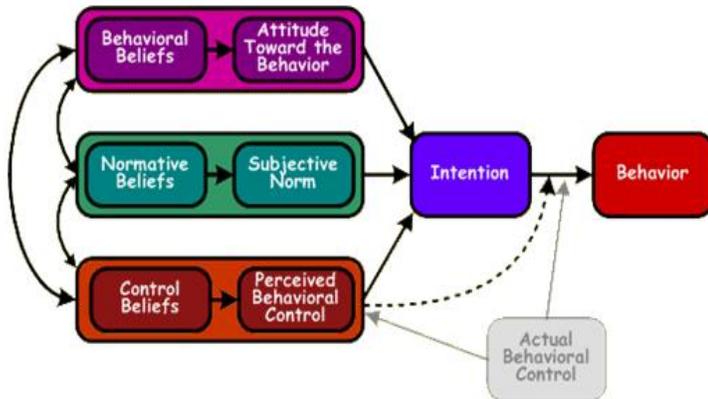
Consumption behavior is greatly influenced by several factors commonly differentiated into intrinsic and extrinsic factors. Intrinsic factors include physiological makeup, educational level, values and attitudes, while extrinsic factors include preferences, income, and availability (Spangenberg & Lorek, 2002). Thorgeson and Olander (2002) conducted a study, qualitative in nature, to determine if consumers' attitudes and behavior towards environmentally-friendly practices and products are influenced by values. The result showed that values, such as Universalism, greatly influence and positively affect the behavior of consumers towards environmentally-friendly and sustainable products and practices.

### **Attitudes and Behaviors in Asia**

An article by Kan (2010) explored how China is keeping up with the green revolution and how being green is perceived in. Chinese consumers are growing the habit of checking green products when purchasing. China is also adopting internationally recognized policies and initiatives. By way of example, China

adopted REACH (Registration, Evaluation, and Restriction of Chemical substances), a model of environmental legislation that originated in Europe. REACH ensures that human health and the environment is not harmed by ensuring materials that are harmful are not used (REACH, 2007).

Theoretical Framework: The Theory of Planned Behavior



**Figure 1.1:** Theory of Planned Behavior schematic representation (Ajzek 2006).

### Theoretical Framework

There are several theoretical frameworks which may be considered. In this study, two of them are dealt with.

#### 1.5.1 Theory of Planned Behavior

#### 1.5.2 Theory of Reasoned Action

### The Theory of Planned Behavior

The theory of planned behavior was introduced by Ajzek and links attitude with behavior (that is performing a certain action). According to this theory, “human action is guided by three kinds of considerations: beliefs about the likely outcomes of the behavior and the evaluations of these outcomes (behavioral beliefs), beliefs about the normative expectations of others and motivation to comply with these expectations (normative beliefs), and beliefs about the presence of factors that may facilitate or impede performance of the behavior and the perceived power of these factors (control beliefs)” (Ajzek 2006). The study measured the effect of the attitudes of customers, measured with appropriate variables, concerning environmental policies made by hospitals on their likelihood to revisit the hospital in the future. An attitude (a) toward a behavior is the degree to which

performance of the behavior is positively or negatively valued. Specifically, the strength of each belief (b) is weighted by an evaluation (e) and the outcome A consists of the aggregated products, as shown in the following equation:

$$A \propto \sum b_i e_i$$

A subjective norm (sn) is the perceived social pressure to engage or not to engage in a behavior. The strength of each normative belief (n) is weighted by a motivation to comply (m), and the outcome SN is again a sum of products, as shown in the following equation:

$$SN \propto \sum n_i m_i$$

A perceived behavioral control (pcb) refers to a person’s perceptions of his ability to perform a given behavior. Specifically, the strength of each control belief (c) is weighted by the perceived power (p) of the control factor, and the outcome PCB is the sum of products, as shown in the following equation. To the extent that it is an accurate reflection of actual behavioral control, PBC can, together with intention, be used to predict behavior (Ajzek, 2006).

$$PBC \propto \sum c_i p_i$$

### The Theory of Reasoned Action

The Theory of Reasoned Action has the following assumptions: 1) Humans are rational and sociable beings, 2) Rationality leads to the accomplishment of tasks according to their desired results, and 3) Sociability provides means for every individual to meet the social needs and concerns of others (Fishbein & Ajzen 1975). In addition, a conceptual model by Ajzen & Fishbein (1980) shows that behavioral intention is determined by the perception and analysis of different behaviors of an individual and the tolerance of such actions by society.

Previous researches indicate that an individual’s norm dictate one’s behavioral intentions (Yang, Blunt, & Butler, 1994). In addition, results of 64 research studies done by Oulette & Wood (1998) show that the past behavior of individuals can have an effect on their future behaviors. With regards to the research, consumers’ attitudes and behaviors towards green hospitals need to be studied and determined if they can

be predictable.

Research by Yu Sum & Hui (2007) discovered that price and the customer's demographic characteristics can affect the loyalty of clients and how they perceive the quality of service that they receive. Specifically, customers with higher income have tendency to expect better service rendered to them compared to those with lower income.

### Identifying Green Hospitals

In order to identify green hospitals and practices for the current research, as a focus for sample and questionnaire development, a review of the literature was performed to determine the characteristics of a green hospital which are most likely to be relevant to consumer attitudes. The findings revolve around the prescriptions and measurements that serve to define a green hospital and the relevant practices for use in gauging consumer opinions.

Regarding the definition of a green hospital, a number of different measurements were found. According to the World Health Organization (WHO), an environment and climate-friendly hospital consists of seven elements: energy efficiency, green building design, alternative energy generation, transportation, food, waste, and water. Energy efficiency focuses on how hospitals reduce energy consumption through the usage of efficient energy-saving products and facilities. Green building design refers to hospital infrastructures that are responsive to optimizing the utilization of energy and reduction of carbon footprints. Alternative energy generation refers to the use of technology that allows hospitals to consume and produce clean air. Transportation refers to healthcare facilities that promote increases in walking, alternative fuels, usage of public transportation, and reduction of automobile transportation. Waste pertains to the practice of re-using, recycling, and reduction of waste production; and, lastly, water implies a reduction of water consumption and a decrease in the need to use bottled water when there are other alternatives available (WHO, 2009). The WHO (2009) stresses that hospitals play a great role in promoting sustainable development and protecting the environment, as they are in a unique position to be credible educators on the effects and benefits of being green. Finally, the WHO (2009) identifies the following areas where hospitals can take

hospital, and look for ways for reduction.

4. Identify consequences and benefits of sustainable practices.
5. Identify ways and means through which sustainability practices in the context of health care facilities can be incorporated in managements standards such as those issued by ISO.

#### *Energy Efficiency.*

6. Create a group or committee that will concentrate on a hospital-wide sustainability practice and be responsible for measuring and assessing baseline emissions, developing areas of priorities, and constructing guidelines.
7. Adopt practices or activities that are efficient in energy and water conservation.
8. Ensure that the hospital buildings are designed and constructed to maximize natural resources such as daylight and air.
9. Install and use energy-efficient, motion-sensing lights and solar lighting, especially in the parking lots. Maximize daylight.

#### *Built Environment.*

10. Mandate the use of green materials in designing and building the healthcare facilities, aim for a carbon-neutral or carbon-negative infrastructure.
11. Support sustainability in the environment by using locally produced materials that will save on transportation costs and fuel consumption, recycled materials; and use products that are made up of recycled materials; use toxic-free materials.

#### *Alternative Energy.*

12. Install and invest in renewable energy like solar panels and wind turbines that produce energy with the use of natural resources such as water and wind.

#### *Transportation.*

13. Locate healthcare facilities in places that are easily accessible to both patients and hospital staff to avoid unnecessary travel.
14. Promote and encourage usage of bicycles, alternative fuels, car pooling, and even walking. Provide incentives like discounts or free bus passes for

action in order to ensure their sustainability and green commitment, quoted here at length because of the relevance these items hold for the sample selection and survey development:

1. Educate hospital staff about the importance of protecting the climate, climate change, and climate change issues. For teaching hospitals and institutions, they can include environmental issues and adaptation efforts in the curriculum.
2. Review previous practices and see whether they can be renovated, changed, or improved.
3. Explore, measure, monitor, and audit the carbon footprint, and water and energy consumption of the those who will commit to the practice.

#### *Waste.*

15. Adopt practices that allow recycling, composting, and reduction of usage of natural materials. 16. Avoid decrease the practice of incinerating medical wastes.

#### *Water.*

17. Use practices and strategies that will allow and promote water conservation. This can be achieved by using efficient faucets, toilets, water sources, plumbing, and pipes, and conducting regular audits. Invest in technology that can harvest, store, and filter rainwater is also suggested. Eliminating the use of bottled water is also encouraged.

#### *Food.*

18. Purchase locally grown products, and reduce serving of meat and hormone-produced products.

Gul, Ozyaral, and Gul (2008) offer another definition, stating that green hospitals can be formally categorized as green according to three definitional standards, depending on the organization that they are affiliated with. These include the US GB's LEED Standards, the Green Guide for HealthCare, and the Hospitals for a Healthy Environment (H2E) standards. Each of these standardized measures holds different implications for professional certification and affiliation. Gul, Ozyaral, and Gul (2008) claim that, affiliations aside, green hospitals can easily be identified based on the following criteria, drawn from those different sets of standards:

paper, water-efficient laundering, energy-efficient equipment or other green products?

2. Contaminants: Does the hospital have a program for reduction of toxins such as mercury and PVC (which can leach toxic plasticizers into the fluids in IV drip bags and tubing)?

3. Materials and Resources: Does the hospital use recycled building materials and resources (such as water), local materials or certified wood?

4. Indoor Environmental Quality: What has the hospital done to improve indoor air quality through increased ventilation and incorporating low-VOC paints, adhesives and materials to avoid off-gassing of formaldehyde, toluene and other carcinogenic compounds? What steps have been taken to create comfortable temperatures and to enhance day lighting?

5. Energy and Air Pollution: What has the hospital done to reduce energy consumption and atmospheric pollution, including chlorofluorocarbon (CFC) reductions, renewable energy, reduced energy consumption, green power and reducing ozone?

6. Siting: Was the hospital sited with consideration for alternative transportation, storm water management, urban redevelopment and reducing any impact on the surrounding environment?

7. Healthy Hospital Food: Do the patient and staff meals include fresh, local and organic foods?

8. Green Education: Does the hospital train staff in waste reduction, toxins reduction and recycling?

9. Social Responsibility Programs: Does the hospital plan social responsibility programs for the stakeholders (community, patients, staff) in order to have a responsible healthcare business.

10. Green Cleaning: Does the hospital use cleaning products that do not release hazardous chemicals?

11. Waste reduction: Does the hospital have a program to segregate medical waste and to reduce, re-use and recycle general waste and furniture and equipment that are no longer needed?

1. Procurement: Does the hospital seek out recycled

Table 1.1 Green Criteria for Thai Government and Private Hospitals

Hospital	1 Procurement	2 Contaminants	3 Materials and Resources	4 Indoor Environmental Quality	5 Energy and Air Pollution	6 Sitting	7 Healthy Hospital Food	8 Green Education	9 Social Responsibility Programs	10 Green Cleaning	11 Waste reduction	12 Healing Gardens	13 Water Efficiency
Siriraj Hospital					√	√	√	√	√		√		√
Rama Hospital					√	√	√	√	√		√		√
Kiang Hospital		√	√		√	√	√	√	√	√	√		√
Bumrungrad Hospital	√	√	√		√	√		√	√	√	√		√
Ramkamheang Hospital	√	√	√		√	√		√	√	√	√		√
Bangkok Hospital	√	√	√		√	√		√	√	√	√		√

(Source Gul *et al.* 2008).

Are staff members trained in their use?

12. Healing Gardens: Does the hospital have healing gardens where patients, staff and visitors can reflect, relieve stress and reconnect with nature? Are there green roofs? Does the landscaping use native plants, which reduce water consumption? (Gul *et al.* 2008)

13. Water Efficiency: Is the hospital water-efficient, taking advantage of landscaping, water use reduction and innovative waste water use?

These criteria, because they are neatly compact and tend to speak to visible program elements within a hospital's offerings (i.e., they emphasize sitting, social responsibility programs, and even healing gardens, as opposed to the efficient management practice reflected in the WHO list) were chosen for this study in defining green hospitals. They are based on industry standards, yet provide a related set of objectives that could be readily converted into a metric for hospital measurement, as described in the Methods chapter.

A green hospital was defined here as one that applied green ecological and environmentally friendly policies in the administration of healthcare services according to the operational criteria developed by Gul *et al.* (2008). These criteria are listed in greater depth in the review of the related literature. They are based on a common assessment of industry standard definitions, and are stated in Table 1.1, with hospital program indications checked where appropriate for each of the subject hospitals:

In order to identify these subject hospitals and obtain these scores, the researcher first conducted an exhaustive search of the hospitals in Thailand to find representative green hospitals. The research literature, government and institutional websites, and personal conversations with experts highlighted the six different programs listed in the table. To confirm that the programs were engaged in green management, the researcher contacted each hospital's management office and conducted a brief phone interview. During the interview, the researcher informed management of the study's purpose, and asked for permission to

include the hospital in the survey, offering to send a copy of the results as an inducement to participate. The researcher then conducted a brief conversation that included a self-assessment on the part of management regarding the existence of the hospital program along the criteria established. Managers indicated they either had a program in place or they did not. No credit was given for plans to implement a relevant program that was not yet realized.

Because Gul *et al.*, as well as others in the literature review, indicate that air, water, and energy concerns are generally among the first and most important green policies implemented, the items dealing with those items were given a weighting value of “2” while other items were given a weighting of “1”. For every programming criterion that the respective hospitals indicated having implemented, they were given the appropriate weighted scores. For every item they were not implemented, a ½ point was deducted. The researcher chose a subjectively-derived total score of 7 to indicate confirmation of a green hospital. This required, at a minimum, that the subject hospitals had at least half of the green policies in place at the time of the study. Using this method, the criteria was measured against institutional self-reporting of implementing programs.

The results showed that Rama Hospital and Siriraj Hospital scored 7.5 points each, while the remaining hospitals scored 12 points each. This may be taken to indicate that the sample included both advanced green hospitals and those that are less advanced in their green programming. While the weighting method used here is exclusive to this study and is subject to claims of subjectivity, it is based on arguments by Gul *et al.* Regarding the established priorities of green hospital programming in reality.

It should be pointed out that none of the hospitals had indoor environmental quality or healing gardens. These concepts, as defined by Gul *et al.*, tend to be more heavily concentrated in North America. Both concepts revolve around environmental health, with the indoor quality concept including air quality, amount of light, placement of windows, and other architectural features that lead to pleasant and healthful experience while indoors, and the healing garden concepts relating to the existence of herbal installations designed to provide an experience that is healthful and peaceful. These concepts

tend to be next-wave concepts and hospitals in Thailand have not yet begun to pay attention to them. It is also noticed from the table that, in terms of healthy hospital food, all private hospitals failed in this criteria as it was found they promote on their premises fast food restaurants such as McDonald's, Dunkin Donut etc. In contrast, Government hospitals such as Siriraj, Rama, and Klang serve fresh organic food from locally grown producers under the Royal King's project. However, no question dealt with both government and private hospitals regarding nutritious food for inpatient. Hospital staffs and outpatients which account for substantial numbers visiting both categories of hospitals, government hospital visitors and hospital staff consume healthier hospital food than private hospitals.

Having determined which green hospitals would be included as the focus of the study and having received permission on the part of the respective hospital administration to conduct the study on the various hospital premises, the researcher determined to go to each hospital personally on a series of successive days in order to select subjects, and conduct the survey introduction and delivery in person.

### **Summary review**

The research literature was reviewed in an effort to lay the theoretical groundwork for the present study. The first consideration that was made was an outline of green initiatives in hospitals and related industries. It was found that hospitals were slow to act on green initiatives initially, but that they now lead the way with a variety of policies and practices designed to achieve environmentally friendly outcomes. However, despite this embrace of green principles, it was found that hospitals often act without adequate consumer opinion data. This was found to be especially problematic for hospitals indicate that their major reason for implementing green technologies and practices revolve around their own financial interests. The need for a study of consumer opinions concerning green hospital was highlighted as a market-based contribution to management decision-making.

The researcher next turned into a definition of green hospitals and the variety of green practice components that are necessary for inclusion in the survey instrument. A list of criteria for green hospitals developed by Gul *et al.* (2008) was selected as the

defining standard for green hospitals due to the fact that the list of criteria was neatly compact and explanatory. Virtually all possible alternative measures are more complex while remaining voluntary and general. They, therefore, offered less utility for an exploratory study such as this one. A list of possible components in green hospital practice, including such concerns as waste management and menu offerings, was identified as possible items for inclusion in the survey instrument. These variables were shown to be critical concerns for hospitals as they often came to define the green practices of the institution. The comprehensive review of the literature yielded a variety of possible green policy programs to serve as measures of gauges for consumer receptiveness to green policies in hospitals.

Finally, a consideration of possible theoretical frameworks for evaluating consumer opinions was undertaken. The Theory of Planned Behavior was settled upon due to its ties to a rational choice model that suggests economic concerns as a primary influence in green programming (rather than values-based concerns or other possible alternatives). The fact that the research review found hospitals pursuing green policies primarily out of economic considerations, without adequate consumer opinion data to justify such economic directions seemed especially supportive of the choice of this model. By using a consumer approach that weighs economic decision making on the part of the consumer, the research will be more likely to make a lasting impression on hospital administrators concerned with their own bottom lines as they pursue green initiatives.

## Methodology

In order to address these questions, a structured survey questionnaire was developed and administered including a variety of instrumental variables relevant to each of the research questions, as derived from the review of the related literature. Survey administration was conducted through in-person sample selection and instrument delivery using purposive, randomized methodology. Data was collected and analyzed using descriptive and inferential statistics.

## Procedure

Hospitals were approached in random order and each hospital was focused upon until a selected number of

subjects had been administered the survey (N = 67 for each hospital; Total N = 402). The number of 402 was selected by attempting to maintain an even balance between the subjects from the hospitals chosen for the study. The chosen hospitals which have green practices and the data obtained are Siriraj, Rama, and Klang hospital as government hospitals, and Bumrungrad, Ramkhamhaeng and Bangkok Hospitals as private Hospitals.

In order to suggest such a calculation here, the researcher referred to Cochran, (1997), who offered the following calculation for valid sample sizes at  $p = 05$ :

$$N = Z^2/4E^2$$

Where

$$N = \text{sample}; Z = 1.96, E = 0.05$$

The z-score is commonly considered to be the score at which the probability reaches .05. Therefore, the calculated sample to achieve .05 leads to the following result regarding minimal sample size:

$$N = (1.96)^2 / 4(0.05)^2 = 384.16 =$$

384

Since the sample size here is over 384, we may assume that probability can achieve appropriate levels that will allow for significant findings that are acceptable.

## 2.2. Instrument

In order to address these questions, a structured survey questionnaire was developed and administered including a variety of instrumental variables relevant to each of the research questions, as derived from the review of the related literature. The survey administration was conducted through in-person sample selection and instrument delivery using purposive, randomized methodology in order to gauge consumer opinion on green hospitals. According to Schutt (2006), purposive data were collected and analyzed using descriptive and inferential statistics, in order to make a definitive conclusion on consumer trends and attitudes towards green hospitals.

## Method of Data Analysis

A descriptive statistical method was used, including the mean, frequencies and standard deviations in order to give a general outlook of patients attending private and public hospitals in Thailand with regard to their attitude and willingness to pay higher fees for green hospital services. This necessitated the use of a t-test, linear regression and one-way ANOVA. The independent variables included gender, age, income and education,

while the dependent variable was the willingness to pay higher fees for green hospital services. In order to address the first research question, reporting of means and standard deviations is utilized to obtain a general view of consumer attitudes towards various green hospital efforts and possibilities. Following this, the applicability of the Theory of Planned Behavior (Research Question 3) was measured by determining means and standard deviations for items designed to measure attitudes, norms, and controls. Finally, the consumer' willingness to pay (Research Question 2) was measured using two-sample t-tests, one-way ANOVA, and linear regression. The independent variables that were used in the regression equation included subscales developed based on the Theory of Planned behavior, measuring attitudes, subjective norms, perceived behavioral control and demographic characteristics. The independent variables used were: gender, age, education, income, group, outcome evaluations, normative beliefs, direct measurement of attitudes, past behaviors, past beliefs, direct measurement of subjective norms, perceived control beliefs, perceived power control, and direct measurement of perceived behavioral control. Finally, the dependent variable is willing to pay more for green hospitals.

### 3. Results and Discussion

Data collected, analyzed and presented in three sections, including the Demographic profile (attendance between private and public hospital), descriptive profile: giving the opinion of the private and public hospital patients and lastly willingness to pay for green services.

#### Demographic Profile

The first consideration was the gender breakdown of the respondents. Results are shown in table 3.1.

**Table 3.1** Cross-tabulation: Gender by Hospital Type.

Attribute	Public (n=201)	Private (n=201)	Total (N=402)
	No (%)	No (%)	No (%)
Male	77(38.3%)	80(39.8%)	157(39.1%)
Female	124(61.7%)	121(60.2%)	245(60.9%)

**Table 3.2** Cross-tabulation: Age by Hospital Type.

Attribute	Public (n=201)	Private (n=201)	Total (N=402)
Years	No (%)	No (%)	No (%)
18-20	0(0.0%)	1(0.5%)	1(0.2%)
21-24	2(1.0%)	2(1.0%)	4(1.0%)
25-34	9(4.5%)	3(1.5%)	12(3.0%)
35-44	15(7.5%)	10(5.0%)	25(6.2%)
45-54	50(24.9%)	106(52.7%)	156(38.8%)
>55	125(62.2%)	79(39.3%)	204(50.7%)

The cross tabulation of age shows that the younger population of both hospitals ( $\leq 44$  years) was virtually the same, but among respondents older than 44 years, the middle aged respondents, aged 45-54 were more likely to attend a private hospital while the older respondents (>55 years) were more likely to attend a public hospital. This finding may have been a proxy for income, as it stands to reason that the younger group would have fewer retirees and great earning potential generally.

A Chi-square calculation was conducted to determine whether the cross-tab was significant, with a result of  $X^2 = 35.5$ , significant at  $p = 0.01$ . This finding indicated a significant finding in regard to the differences found in the table.

Another possibility could be that public hospitals have programs that cater to older customers. The research net turned to educational demographics, as found in Table 3.3.

**Table 3.3** Cross-tabulation: Education by Hospital Type.

Attribute	Public (n=201)	Private (n=201)	Total (N=402)
	No (%)	No (%)	No (%)
High School	154(76.6%)	169 (84.1%)	323(80.3%)
Associate/ Bachelor	24(11.9%)	8 (4.0%)	32(8.0%)
Master's or Higher	23(11.4%)	24(11.9%)	47(11.7%)

Regarding the educational level attained, the public hospital respondents were slightly more likely to have higher education than the private hospital respondents. This result was somewhat surprising, considering the possibility that those with higher education would likely have higher incomes and be better able to afford private care. A Chi-square calculation was conducted to determine whether the cross-tab was significant, with a result of  $X^2 = 8.7$ , significant at  $p = 0.1$ . This finding indicated a significant finding in regard to the differences found in the table. In order to determine whether there were in fact any difference in income between respondents, the researcher next turned to those cross-tabs. Table 3.4 shows the results of the income comparison.

**Table 3.4** Cross-tabulation: Career by Hospital Type.

Attribute	Public (n=201)	Private (n=201)	Total (N=402)
	No (%)	No (%)	No (%)
Student	3(40.9%)	4(57.1%)	7(1.74%)
Government Official	2(20%)	8(80%)	10(2.49%)
Corporate Employee	25(59.5%)	17(40.5%)	42(10.45%)
Private Business/ Trader	170(49.7%)	172(50.3%)	342(85.07%)
Other	1(0.5%)	0(0%)	1(0.25%)

85% of those who responded have private business or are traders, 10% are corporate employees while 2% are Government officials. Students account for 2% of the sample while 25% belong to the other category. Remarkably student respondents are more in Private (4) than in Public (3), a similarly cluster of respondents who are government officials visited Private (8) more than Public(2). While Corporate employees visited more in Public ( 25 ) them in Private ( 17 ) hospitals.

**Table 3.5** Cross-tabulation: Income per Month by Hospital Type.

Attribute (Baht)	Public (n=201)	Private (n=201)	Total (N=402)
	No(%)	No(%)	No(%)
<10,000	88(43.8%)	22(10.9%)	110(27.4%)
10,000-19,000	112(55.7%)	160(79.6%)	272(67.7%)
20,000-29,000	1(0.5%)	14(7.0%)	15(3.7%)
30,000-39,000	0(0.0%)	4(2.0%)	4(1.0%)
Above 40,000	0(0.0%)	1(0.5%)	1(0.2%)

As expected, the private hospital patrons were more likely to have higher incomes than their public hospital peers. This was believed likely due to the higher costs of private care in Thailand. Regarding the effects of demographic factors, it may be reasonable to expect that they would be more willing to pay not just for private care, but green care. It may also be the case that those who go to private hospitals do so because they believe these hospitals are more likely to be green. In order to test these possibilities, the researcher computed cross-tabs for hospital type and two variables that directly measured expressed desire for green policies at hospital attended (item 7) and willingness to pay more for green policies (items 4). The results are shown in Table 3.6.

**Table 3.6** Green Expectations and Willingness to Pay by Hospital Type.

Description	Public $\bar{x}$	Private $\bar{x}$
I would be willing to pay more to ensure that my hospital complies with environmental friendly policies (item 4)	3.16	4.10
The hospital that I visit should have an environmental friendly policy	3.58	4.16

These findings indicate mixed results. Public hospital patients are more likely to demand their hospitals have green policies but are less willing to pay for their implementation. This may be a result of the basic funding structure of public hospitals generally, in which public patients receive effective subsidies from the government. These respondents may have come to expect green health care as an entitlement and don't expect to have to pay for it. While such considerations are outside of the scope of this study, it is interesting to note that private care respondents appeared willing to pay but less likely to demand green policies, while their public cohorts responded in the opposite manner.

### Components of the Theory of Planned Behavior

For the purposes of interpretation, the following scale has been used to interpret the averages garnered on the statements of the questionnaire throughout this section. These scales are 'artificial' in the sense that only the extremes are found in the questionnaire. These were constructed only for the purpose of interpreting the means garnered in the study, following comments made by Jamieson (2004) regarding the use of Likert scale items as ordinal data. The scale used to be as follows: 1.00-2.49 – Not important/true; 2.50 – 3.49 – Neutral; 3.50 - 4.49 – Slightly Important; 4.50- 5.49 – Moderately important/true; 5.50-6.49 – Important/true; 6.50-7.00 – Extremely important/true. These groupings simply indicate increasing degrees of importance attached to each facet of green practice presented in each statement.

The overall attitudinal results indicate that engaging in formal "green" policies was rated as slightly important/true by the respondents in the survey ( $X = 4.12$ ,  $sd = 0.53$ ). The respondents indicated that they found the

The next cluster evaluated represented the effects of normative beliefs, described as the expectations other place upon individuals or perception of societal norms. The results are found in Table 3.7

**Table 3.7** Descriptive statistics: Normative beliefs towards Green Hospitals

Description	$\bar{x}$	SD	Degree of acceptance
1. Most people in my environment think that I should endorse Green activities	4.20	1.02	Slightly important/true
2. People nowadays are forced by media, school, politicians to participate in Green activities	4.23	1.00	Slightly important/true
3. Hospitals are forced by governments to participate in Green activities	2.95	1.06	Neutral
Overall Normative beliefs	3.79	0.67	Slightly important/true

The first statement, assessing the possible impacts of peer influence by people in one's environment regarding attitudes toward green activities garnered slight agreement ( $X = 4.2$ ,  $sd = 1.02$ ) as did the statement assessing the community pressure to practice green policies ( $X = 4.237$ ,  $sd = 1.0$ ) regarding the question of whether hospitals are forced by governments to participate in green activities, the respondents indicated a neutral response ( $X = 2.95$ ,  $sd = 1.06$ ). Overall, normative beliefs garnered slight importance/agreement ( $X = 3.79$ ,  $sd = 0.67$ ).

The next cluster considered the impact of behavioral controls. These may include such factors as feelings, beliefs, or environment conditions (including the behavior of others). Table 3.8 considers how important these are measured in responses.

**Table 3.8** Descriptive statistics: Behavioral Controls.

Description	$\bar{x}$	SD	Degree of acceptance
1. I will change my decision over a business, based on feelings.	3.54	0.94	Slightly important/true
2. I will change my decision over a business, based on beliefs.	3.83	0.96	Slightly important/true
3. If I found out that a business is negligent towards the environment, would that influence my decision to stay with the business?	4.20	0.96	Slightly important/true
Overall Behavioral Controls	3.85	0.47	Slightly important/true

The findings in this table show that, while behavioral controls tended to be more important in the respondents estimation of attitudes toward green policies ( $X = 3.85$ ,  $sd = 0.47$ ) than normative beliefs ( $X = 3.79$ ,  $sd = 0.67$ ), they were less important than basic attitudinal stances regarding the issue. ( $X = 4.17$ ,  $sd = 0.53$ ). This suggests that hospital managers should make efforts to understand the internal *attitudes* of consumers toward green policies, rather than merely attempting to influence the cultural or change systemic conditions in hopes that doing so will lead to green receptiveness. While the theory of Planned Behavior suggests that, when consumers are forced to act one way, they will be likely to do so unless their intention is rigidly opposed. The findings here suggest that intention, as derived through attitudes toward green policies, is the most important factor driving consumer behavior.

Because the findings here, as related to the Theory of Planned Behavior, seem to suggest that attitudes are most critical to consumer behavior, but that norms and controls are also important, a number of statistics for variables were computed that measure both past behavior and attitudes and planned behavior

regarding green hospitals. These findings, while not germane to the consideration of the Theory of Planned Behavior here, may lead to important concerns for hospital administrators as they plan their approaches to green policies. The statistics are presented in Table 3.9

**Table 3.9** Descriptive statistics: Past Attitudes and Behaviors, and Future Intentions.

Description	$\bar{x}$	SD	Degree of acceptance
1. The hospital that I visit should have an environmental friendly policy.	4.49	1.10	Slightly important /true
2. Most of the people I know would prefer attending a hospital that has a "green" policy:	4.39	1.04	Slightly important /true
3. I participate in green activities	3.74	1.32	Slightly important /true
4. It is important to think and behave in an environmentally conscious way.	4.95	1.00	Moderately important /true
5. A Green hospital takes better care of its patients by reducing chemical and toxic exposure.	3.49	1.05	Slightly important /true
6. A green hospital is much more responsible to the society	3.64	1.08	Slightly important/true
7. Making a hospital "green" has no effect on the global climate change and natural disasters	3.59	1.03	Slightly important /true
8. I plan to get informed about Green policies in Hospitals	4.17	1.06	Slightly important /true
9. I believe that Green Hospitals would probably incur more costs to the patients	3.83	1.10	Slightly important /true

**Table 3.9** Descriptive statistics: Past Attitudes and Behaviors, and Future Intentions.(Continue)

Description	$\bar{x}$	SD	Degree of acceptance
10. I believe that Green Hospitals would probably incur better quality of care for the patients	3.81	1.08	Slightly important /true
11. Most people who are important to me thinking that Green policies in hospitals are	3.69	2.12	Slightly important /true
12. I believe that Green Hospitals would probably incur a better prognosis for the patients	3.81	1.08	Slightly important /true

These findings, like the others in this section, show that respondents acted out of their beliefs, perceived the beliefs of others, and planned their attitudes and actions based upon a lukewarm receptiveness toward green policies. The most important findings from Table 4.10 are that respondent seems to be most receptive to green policies and practices when the cost of belief and actions is low. They plan to get informed ( $\bar{X} = 4.17$ ) and think environmentalism is important ( $\bar{X} = 4.95$ ). They want green hospitals ( $\bar{X} = 4.49$ ) generally and think most other people do too ( $\bar{X} = 4.39$ ). But when asked specifically about such factors as green hospitals' impacts on the environment, or standard of care, or price, they are less enthusiastic.

### Willingness to Pay

In order to address the research question dealing with consumers' willingness to pay for green hospitals, a number of statistical measures are presented in this section. The first consideration is a descriptive analysis, found in Table 3.11.

The respondents were asked if they would pay as much as 10% to go to a hospital that has a Green policy, and this was rated as moderately likely ( $\bar{X} =$

4.76,  $sd = 1.07$ ). This finding, coupled with finding 9 in Table 3.10 about respondents' beliefs about the costs of Green policies, may show a disconnection between expectations and attitudes. Respondents seem to be ready to pay higher costs, but they seem to be uncertain whether Green policies will cost more.

**Table 3.11** Descriptive statistics: Willingness to pay.

Description	$\bar{x}$	SD	Degree of acceptance
Would you pay more (up to 10%) to go to a hospital that has a Green policy?	4.76	1.07	Moderately important/true

In order to determine the factors driving attitudes toward willingness to pay more, regression statistics ( $R$  and  $R^2$ ) are presented in Table 3.12.

**Table 3.12**  $R^2$  of regression of independent variables against willingness to pay.

Model	R	R Square	Adjusted R Square	Standard Error of the Estimate
1	.400 <sup>a</sup>	.160	.135	1.13051

a). Predictors: (Constant), Direct Measurement of Perceived Behavioral Control, Age, Control Beliefs, Direct Measurement of Subjective Norms, Group, Sex, Income, Perceived Power of Control, Direct Measurement of Attitudes, Past Behavior, Normative Beliefs, Outcome, Behavioral Beliefs, Education.

The findings show that independent variables considered in the current study, based on the Theory of Planned Behavior, explain 13.5% of the variance in willingness of patients to pay (adjusted  $R^2 = .135$ ). In order to weigh this finding further, a one-way ANOVA score was computed, as shown in Table 3.13.

**Table 3.13** One-way ANOVA of regression of independent variables against willingness to pay.

	Model	Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	117.813	14	8.415	6.584	.000 <sup>a</sup>
	Residual	619.851	485	1.278		
	Total	737.663	499			

a). Predictors: (Constant), Direct Measurement of Perceived Behavioral Control, Age, Control Beliefs, Direct Measurement of Subjective Norms, Group, Sex, Income, Perceived Power of Control, Direct Measurement of Attitudes, Past Behavior, Normative Beliefs, Outcome, Behavioral Beliefs, Education; b. Dependent Variable:

The one-way ANOVA is significant ( $F= 6.58$ ,  $p= .00$ ), suggesting that some of the independent variables are significant predictors of willingness of patients to pay for green hospitals. Next, linear regression statistics were performed in order to determine which ones seemed most important. The findings are shown in Table 3.14.

**Table 3.14** Linear regression of independent variables against willingness to pay.

	Variable	Unstandardized Coefficients	Standardized Coefficients (Beta)	t	Significance
	B	Std. Error			
	Constant	4.536	.579	7.835	.000**
1.	Sex	-.287	.106	-2.716	.007**
2.	Age	.061	.045	1.375	.170
3.	Education	.232	.207	1.120	.263
4.	Income	.014	.318	.045	.965
5.	Group	-.136	.104	-1.305	.193
6.	Outcome	.247	.053	4.632	.000**
7.	Normative Beliefs	.100	.041	2.451	.015*
8.	Direct Measurement of Attitudes	-.097	.033	-2.998	.003**
9.	Behavioral Beliefs	-.309	.054	-5.733	.000**
10.	Direct Measurement of Subjective Norms	.026	.043	.608	.543
11.	Control Beliefs	-.025	.036	-.701	.483
12.	Perceived Power of Control	-.008	.025	-.306	.759
13.	Direct Measurement of Perceived Behavioral Control	-.069	.033	-2.094	.037*
$R^2 = 0.160$ $F = 6.584$ $Adjusted R^2 = 0.135$ $Sig. F = 0.000$					

\* $p < 0.05$ , \*\* $p < 0.01$

The linear regression shows that the following are significant predictors of willingness to pay more for green hospitals: sex ( $B = -.287, p = .007$ ); outcome evaluations ( $B = .247, p = .000$ ); normative beliefs ( $B = .100, p = .015$ ); direct measurement of attitudes ( $B = -.097, sd = .003$ ); control beliefs ( $B = -.309, p = .000$ ), and direct measurement of perceived behavioral controls ( $B = -.069, p = .037$ ). The negative correlation of gender and willingness to pay suggests that males are more likely to pay more for green hospitals. Moreover, outcome evaluations and normative beliefs are significantly and positively correlated with willingness to pay more for green hospitals. The negative correlation with direct measurement of attitudes suggests that those even if they currently do not place much importance on a hospital having a green policy or in their friends preferring such a hospital, consumers would be more willing to pay for one. Moreover, the negative correlation with control beliefs suggests that those who change hospitals less frequently are also more likely to pay more for green hospitals. Finally, the negative correlation with direct measurements of perceived behavioral control suggests that even as they do not believe that most people who are important to them think that Green policies in hospitals is important, and lack of belief that Green Hospitals would probably incur better prognosis for the patients, they are still willing to pay more for these.

## Discussion

### **Objective 1: To explore consumers' attitudes towards perceived areas of green practice in hospitals.**

All clusters, namely, attitudes, norms, and behavioral control were rated with generally slight agreement. This suggested that the respondents are lukewarm in their assessments of the need for green hospitals. They seem to want them generally, and seem to be willing to pay a higher price for them, but when the items grew more specific in their probing of attitudes, their receptivity cooled slightly. Moreover, it was found that private hospital patients have more positive attitudes towards green hospitals compared to their public hospital counterparts. While the theory of Planned Behavior suggests that controls on behaviors would be possibly even more important than attitudes or perceptions of norms, this study found that attitudes

seem most important in determining consumer behavior. This finding is statistically fairly weak and should be weighed as merely exploratory. The general findings that consumers seemed to respond with greater commitment to attitudinal variables that were general as opposed to specific may indicate that the respondents are saying what they think is required of them, ultimately reflecting societal norms regarding environmentalism. When they were questioned about specific aspects of the program, they indicated less enthusiasm.

The author was also concerned about the potential of the health care industry to be sustained and continue in its 'green' advocacies for the long term. This is why the survey also focused on the past behaviors and future intentions of the respondents. For instance, one question dealt with the attention already paid by respondents caring for their environment. Most respondents answered in the affirmative, however slight, many also answered negatively and the findings were mixed. This is important, since the Health Facilities Management (2008) study cited impacts upon on the health care industry's decision to go green. Various reasons were cited, but the most recurring reason was to cut energy costs. Other reasons were also given, such as long-term cost benefits, a perceived obligation to protect the environment, and good PR. Some of these items were even incorporated into mission statements. The survey also sought to list some challenges arising from being green, including high initial costs, the cost gap between traditional and 'green' materials, and balancing this commitment with other organizational goals. While these are among the most notable, other obstacles still exist. In light of these findings, given the relatively mild response of consumers towards the measured attitudinal variables, the obstacle of costs, once they become exacerbated, may become problematic.

### **Objective 2: To ascertain consumers' willingness to pay for green hospitals.**

The results show that patients were only in slight agreement to paying more for green hospitals. While this still represents a positive attitude towards green hospitals, informing the general public about the advantages of being green would help enhance such willingness.

Respondents were asked about their attitudes, subjective norms, and perceived behavioral control towards green hospitals, in an attempt to apply the Theory of Planned Behavior to consumer willingness to pay for and favor green hospitals. These were only rated by slight importance. Kan (2010) looks into how China is taking the green revolution and implementing the relevant practices. He found that more Chinese consumers check whether or not the products they buy are green. This is a phenomenon that happens to be on the rise among the Chinese, especially in their cosmetics industry. Such awareness does not seem to be heightened among Thai health care patients, at least as far as this study was able to determine.

In the survey results, most of the respondents answered that they consider being environmentally conscious to be very important. Most of them are also concerned with the fact that some hospitals do not have a green policy at all, and hence, as much as possible, they would like to visit or attend hospitals that have a good reputation of taking care of their environment. Most of the respondents also felt that the same criteria also applied to the people that they knew (acquaintances/loved ones). Judging from the results, most respondents answered in the affirmative. It is indeed confirmed that green policies do have an effect on preferences. That hospital swore never to do anyone harm through the Hippocratic Oath makes it urgent for Chinese hospitals do something about this problem. The results on willingness to pay more may be made more positive with efforts to disseminate information on green practices and its benefits within the healthcare industry. Hence, like all other industries before them, hospitals as a whole sought to be more environment-friendly.

**Objective 3: To predict attitudes, subjective norms, and perceived behavioral control leading to the probability of consumers to actively seek and visit green hospitals.**

The third objective was answered through the linear regression analysis. The outcomes suggest that the following are significant predictors of willingness to pay more for green hospitals: sex; outcome evaluations; normative beliefs; direct measurement of attitudes; control beliefs, and direct measurement of perceived behavioral control. The negative relationship

of gender and willingness to pay suggests that males are more likely to pay more for green hospitals. In addition, outcome evaluations and normative beliefs are significantly and positively correlated with willingness to pay more for green hospitals. The negative correlation with direct measurement of attitudes suggests that those even if they currently do not place much importance on a hospital having a green policy or in their friends preferring such a hospital, they would be more willing to pay for one. The negative correlation with control beliefs suggests that those who change hospitals less frequently are also more likely to pay more for green hospitals.

These results suggest that the theory of planned behavior's attitudes, subjective norms, and perceived behavioral control, as well as the gender of patients do explain the willingness to pay for green hospitals. Increasing knowledge towards being green may enable them to consider the benefits of being environmentally friendly. The general public must have increased awareness about being a 'green' hospital, which should possess: energy efficiency, green building design, the use of alternative energy sources (solar power, for instance), transportation, food, waste and water. (WHO, 2009). These are all said to be important, as hospitals are by definition supposed to be sustainable and environmentally friendly. More than any other establishment, a hospital would be in a good position to talk about the benefits to be had by being green. And of course, they can also help keep climate change to a minimum by rethinking their energy and water consumption, not to mention their carbon footprint. Gul et al (2008) recommends that hospitals investigate their procurement, contaminants, materials and resources, indoor environmental quality, energy and air pollution, location, hospital food, green education and cleaning, social responsibility programs, waste reduction, healing gardens and water efficiency.

Based on the results of the survey, most respondents felt that there is a need for the hospitals that they attend to be environmentally conscious, although this has only been rated with slight agreement/importance. This just goes to show the importance that individuals place on the well-being of the environment. As the heading implies, this portion aims to discuss some environmental initiatives that make commitments to sustainability and being green easier to

meet, measuring them with an auditing process according to set guidelines. While such initiatives are strictly voluntary, they undeniably help in enhancing an establishment's reputation among its consumers.

The respondents of the survey were asked about whether they would remain in their respective organizations if they found out that their organization operated by hazardous means and did not have green policies. From these results, the researcher found out that although most respondents answered that they would leave, a large number of them replied that leaving their respective jobs depends on other factors and not just being environmentally conscious. Moreover, according to the survey results, most of the respondents do not believe that green policies and activities being implemented by hospitals would contribute towards increases in the hospital bills of the patients. This goes hand in hand with the literature presented above. However, when asked whether respondents would be willing to pay more for a 'greener' hospital, this was only met with slight agreement. Most respondents answered that greener hospitals are needed even though they would be compelled to pay extra.

#### 4. Conclusion and Recommendations

The results of the study suggest that patients from public and private hospitals in Thailand are slightly in agreement with green hospital programming in terms of their expressed attitudes, subjective norms, and perceived behavioral controls. However, the expressed levels of commitment are not high and may be driven by complicated reasoning. For example, one possibility that was suggested in the last chapter is that respondents answered with what they thought to be the appropriate green answer when discussing the needs for environmental approaches, but when asked about specifics, they were less enthusiastic. This could mean that they were giving correct public answers or that their passion runs shallow. In either case, the fact that they indicated a willingness to pay for green practices, but didn't really expect green technologies to cost much more, seems to believe naiveté on the part of the consumers. They seem to want green hospitals and indicate a willingness to pay. But their unrealistic expectations of additional costs may become problematic when green initiatives become further introduced. This finding is important for hospital managers to consider. They should be careful about

running too far ahead of public opinion. Further, they should develop public education programs that promote realistic expectations regarding green hospitals.

The study found that consumer attitudes towards perceived green areas in hospitals were related to subjective norms and behavioral controls. This suggested that the Theory of Planned Behavior does provide some descriptive power for gauging public opinion. This is because consumers tended to agree with general themes more enthusiastically than with specific programs. With regards to the willingness to pay more for green services, patients were only in slight agreement. One interesting finding was that public hospital respondents were more willing to demand green programs but less willing to pay for them, while private hospital respondents were the opposite. Additionally, many respondents indicated willingness to pay but an unrealistic expectation that green technologies would not cost much more. Finally, gender and normative beliefs contribute to subjective norms and perceived behavioral control that lead consumers to visit green hospitals, whereby males are more willing to pay for these services. The negative correlation of perceived behavior and consumer attitude suggests that people are influenced by the belief that most people who are important to them think that green policies in hospitals are not important, and that green hospital do not offer any better diagnosis for patients. However, increasing knowledge towards green services may influence patients to consider the benefits of being environmentally friendly. As such, hospitals should put more efforts in transition towards environmentally friendly services, and engage in an active campaign to educate the general public on the benefits of green services.

#### Recommendations

Given the nature of these findings, the following recommendations are made.

#### Recommendation From Research Findings

This research finds that Thai subjects have the beginnings of what may become consensus views on green hospitals, especially regarding their desire or willingness to attend green hospitals. However, this attitude is ill-formed and poorly-informed. For example, it seems to be held with a contrary view that green technology will not cost more. Due to the fact

that it is weakly held, this view could change depending on the level of education consumers receive regarding the realities of green hospitals and the continuing extension of green healthcare programming. Specifically, the author would recommend that green hospital implements community outreach and education programs that are designed both to inform the public about the nature of green hospitals, including benefits and costs, and promote healthy lifestyle options that will make the choice of green hospitals more appealing and rewarding. Because this study found moderate but significant support for the theory of planned behavior regarding the attitudes and control beliefs of patients toward their green hospital choices, it is recommended that outreach programs be designed around improving community and individual attitudes regarding green hospitals and removing obstacles that imply limited access. Through the design of such programs, one may expect that people will gradually come to seek out green hospitals with realistic expectations and thereby receive more rewarding treatment.

### **Recommendation For Policy-makers**

For policy-makers, a number of recommendations are also in order. The research showed that even patients who sought out green hospitals often had conflicting or incomplete information regarding them. Policy makers should therefore attempt to better understand the patient community and to regulate and standardize the designation of what constitutes a green hospital. Hospital administrators should work to increase their own programming so that reasons for a given approach to green hospital are clearly tied into an overall standardized plan, and regulators should work to make sure that green hospitals are offering both suitable and desirable programs that meet international and research-based approaches. Other forms of behavioral research regarding the green health care and green hospitals should be conducted, including, for example, content analysis of public hospital documents, marketing and public education materials, and the like, in order to determine how hospitals present green initiatives to the public. Such research will be useful for analyzing the formulation of public opinion regarding green hospitals as well as for assessing the goals and effectiveness of green programming. It will also be useful for policy-makers to understand in approaching the public. It is hereby recommended that

policy-makers initiate research designed to determine public opinion around green hospitals and to match public programming efforts to that opinion.

### **Recommendation For Further Research**

More research should be conducted, with larger samples and different methods to determine Thai consumer attitudes toward green health care. In particular research that addresses the alignment of attitudinal beliefs of patients with reality-based programming should be conducted. Such research should also include weighing the views of managers toward consumer attitudes. By providing further analysis on this topic, the researcher expects that managerial attitudes and consumer attitudes will come into closer alignment and the public will become more receptive to and realistic about green hospitals. Resource and cost studies should be conducted and released to the public regarding the actual effects of green technology use in hospitals. One possible reason that the respondents in this survey seemed to have unrealistic expectations is that they have not been fully informed about the costs and the tradeoffs made to satisfy those costs in regard to green hospital programming. It is recommended that community resources be tapped for further study, so that the value of partnerships with local organizations for educational programming in promoting green hospitals is better understood. Such research may include the use of community centers to conduct surveys around green hospitals and educational programming, or observational assessment of public outreach days designed to promote public knowledge and community health around green health care.

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