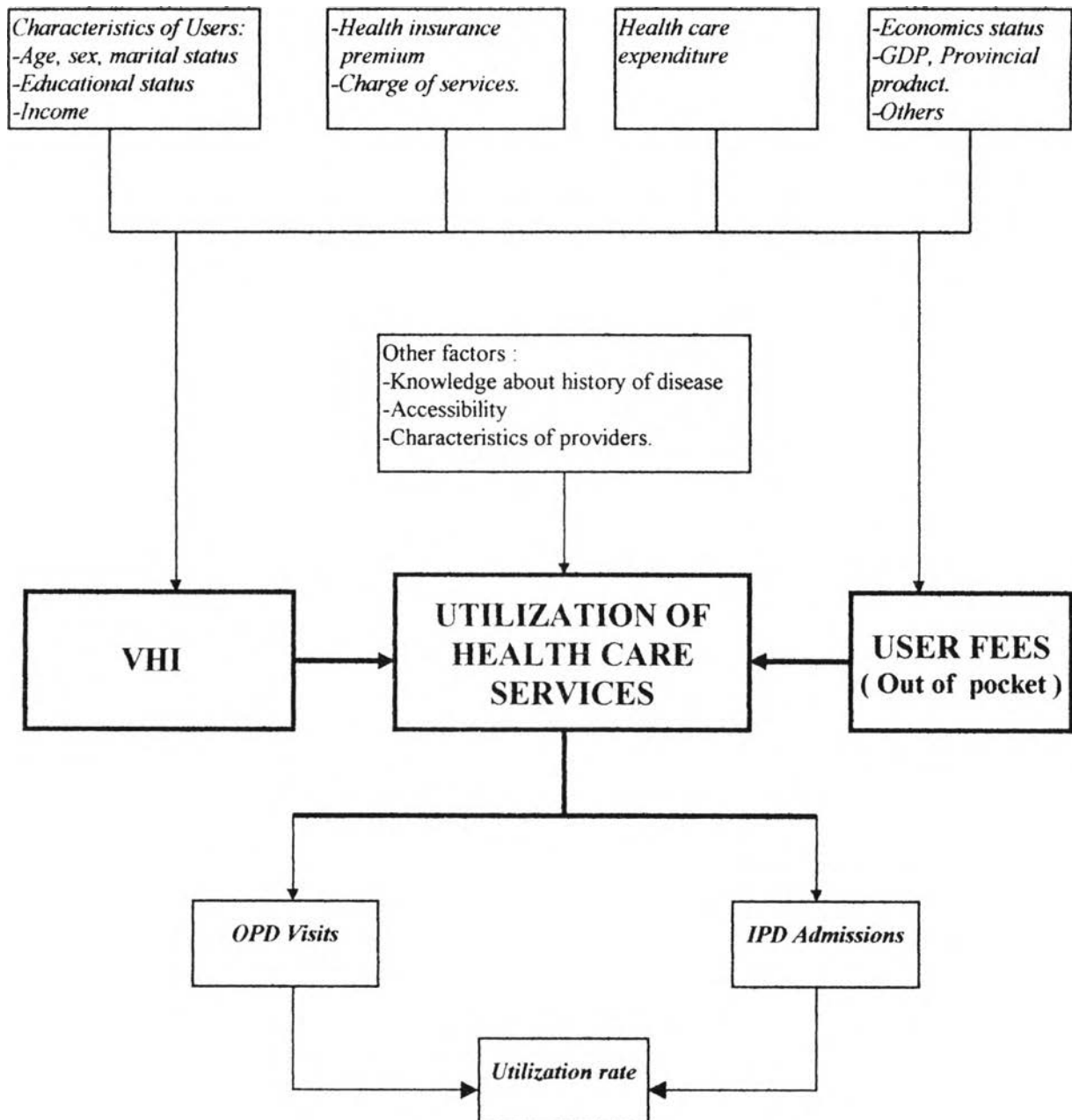# Chapter 4

RESEARCH METHODOLOGY

The methodology for this study will be presented in this chapter in the following sections: Conceptual Framework, Methodology, and Source of data.

4.1 Conceptual Framework

This study looks at the utilization of health care services under the two schemes of Voluntary Health Insurance and User's fees from both the perspective of the consumer, and the provider. The objective of this study is to analyse the impacts of Voluntary Health Insurance on health care utilization. To this end, an investigation of factors affecting the utilization rate is necessary for both meeting this objective and drawing the policy recommendations to improve the utilization rate. Factors affecting enrollment to the Voluntary Health Insurance are identified in this study as the characteristics of the insured (age, sex, marital status, income), consumer satisfaction with services, the health insurance premium, charge of services, health care expenditure, and the economics status of Vietnam. These factors also influence the user who pay out of their pocket to utlilize the services provided. Other factors effecting utilization include knowledge of the history of disease, accessibility, and the characteristics of the providers. Due to the necessity to limit the scope of this research, this study only identifies the factors that influence the enrollment of voluntary health insurance, whether or not there is a relationship with user fees, and utilization of health care services.

Figure 4.1 Conceptual framework

Characteristics of Users: -Age, sex, marital status -Educational status -Income	-Health insurance premium -Charge of services.	Health care expenditure	-Economics status -GDP, Provincial product. -Others

Other factors :
-Knowledge about history of disease
-Accessibility
-Characteristics of providers.

VHI

UTILIZATION OF HEALTH CARE SERVICES

USER FEES (Out of pocket)

OPD Visits

IPD Admissions

Utilization rate

User-fees for health care are already a major source of revenue to the health sector in most countries. Fees serve two principal functions: they generate revenue from those patients who judge the service to be worthwhile at the going price and they divert patients who either cannot pay or who judge the services less desirable than some alternative to other sources of care. Of course both of these functions can be performed by other mechanisms than user charges, but is important to note that user fees mean people who pay out of their pocket will affect the utilization of health care services.

The utilization of health care service were obtain from patients who were both those who paid the user fees out of their pocket and VHI members based on both OPD visits and IPD admissions.

4.2 Methodology

4.2.1 Research Design

This study used a combination method of descriptive analysis and a modelling study to identify the impacts of the Voluntary Health Insurance scheme on health care utilization in Vietnam.

The key points of this study are to compare and analyse trends of Voluntary Health Insurance and utilization of health care.

The population sample for this study is comprised of members of the Voluntary Health Insurance Scheme, both people who buy VHI when ill using out-patient services and in-patient admissions at the levels can provides health care for 61 provinces in the whole country. Quantitative secondary data were collected from the MOH and National Health Insurance for the period of 1993 - 1997 (5 years).

The data for the modelling study (as presented in section 4.2.3 Data analysis) were collected from 8 provinces. The provinces were selected purposively, as follows:

- 2 provinces of North region ie Hanoi and Haiphong
- 3 provinces of Central ie Danang, Binhdinh and Khanhhoa
- 3 provinces of South ie Ho Chi Minh City, Cantho and Baria-Vungtau.

The data was observed between 1993 to 1997. Thus, there were 40 observational data collected for the model.

4.2.2 Data Collection

- Coverage of VHI: number of VHI members by categories.
- Utilization of OPD visits, IPD admissions and utilization rate (visits/person/year) under the VHI and the user fees scheme.
- Factors: user fees, premium, health expenditures, income per capita.

The patients are first classified by the area of the health care system, i.e. into inpatient department (IPD) and outpatient department (OPD), then categories of patient are identified by diagnosis.

Table 4.1 Type of variables and Source of data.

Variable	Measurement	Unit Measurement	Data source
Coverage	Population who become member of VHI	Number of person	Vietnam National Health Insurance period 1993 – 1997 (5 years).
Utilization	Visits and admissions	Number of OPD visits, IPD admissions	MOH, Vietnam National Health Insurance. Period 1993 - 1997 (5 years).
User fees	Charge of health service	VNDong	MOH period 1993 - 1997 (5 years).
Premium	Charge of health insurance	VNDong	Vietnam National Health Insurance period 1993 – 1997 (5 years).
Health care expenditure	Average Health expenditure	VNDong	MOH period 1993-1997 (5 years).
Income	Average income per capita	VNDong	National statistic office period 1993 - 1997 (5 years).
Provincial product	Average Provincial product	VNDong	National statistic office, period 1993 - 1997 (5 years).

Source of data for this study consists of available official records available at the Ministry of Health and the Vietnam Health Insurance Office as follows:

– Data about number of members of the Health Insurance Scheme, revenues and expenditures of it during 1993-1997 were collected from the Health Insurance Office.

– Data of user's fees were collected from the Health Financing Department and the Therapy Department of the Ministry of Health.

– Data on the health status, and the economic situation of Vietnam were collected from the Ministry of Health and the National Statistic Department.

4.2.3 Data Analysis

The coverage of health insurance and utilization of health care under VHI from 61 provinces were analyzed by the descriptive method.

The data included in the coverage of health insurance comprised:
- Coverage of Compulsory and Voluntary Health Insurance
- Premium of each scheme
- Revenue of each scheme

The data included in the utilization of health care services under the Voluntary Health Insurance scheme comprised:
- OPD visits
- IPD admissions

The modelling study with the data of 8 provinces were selected to be used in the equation used to identify the factors influencing enrollment of in the VHI scheme. The equation is as follows.

The function form as:

$$Prob(JoinVHI) = f \text{ (Out of pocket, Premi, Quality)}$$

Where:

Prob(JoinVHI): *Probability to joint voluntary health insurance*

Out of pocket: *Total revenues of user fees per total health care expenditure for user charge patients.*

Premi: *Premium of voluntary health insurance per Income (Income means GDP capita)*

Quality: *Total health expenditure per provincial product (in Vietnam, responsibility lies with the government sector).*

This model implied that people who join VHI will not join other schemes. The demand for a good depends on its price, as well as on consumer income and on the price of other goods. Similarly, supply depends on price, as well as on variables that affect production cost. For example, if the price of goods increases, the quantity demanded will fall, and the quantity supplied will rise. Often, however, we need to know by how much the quantity supplied or demanded will rise or fall. With health insurance, the factors that would affect the demand for health insurance are as follows:

- The price of insurance (premium). The higher the price of insurance (the amount above the pure premium), the fewer individuals will join the VHI.
- An important factor that affects the price of insurance is whether the individual is part of a large employee group when purchasing insurance. Group policies are sold at substantially lower prices.
- Income of the individual. The size of a person's income and weath will affect the amount above the pure premium they are willing to pay for health insurance.

To assess revenue percentage of money paid out of pocket, by government or other contributed under compulsory, voluntary health insurance or user fees were used.

To find the factors associated with the decision of enrolling inVHI also can use the data following the formulas below.

$$\text{Prob(JoinVHI)} = f (\text{Out of pocket, Premi, Quality}) \quad \{1\}$$

$$\text{Utilization} = h \frac{\text{VHI}_{\text{patients}}}{\text{Pop}} + k \frac{\text{Out of pocket}_{\text{patients}}}{\text{Pop}} \quad \{2\}$$

Explanations :

{1} Implicate of the VHI probability of population.

{2} Implicate of the number of visits of population under VHI scheme and under user fees scheme(patients who pay out of their pocket).

− Total revenue of UF per health expenditure for UF patients (total number of patients pay UF). This proxy of "**Out of pocket**" represents the percentage of cost recovery for user fees scheme. This cost recovery rate increases meaning VHI enrollmentdecreased. Thus, people go to the user fees scheme, thinking they might get higher benefits of services.

− The VHI premium is divided by capita income proxy of the "**Premi**" which represents the price of Voluntary Health Insurance . Its compared between VHI premium and income capita. When premium decreases and income increases, more people will buy a VHI card. Effects of income and household consumption is associated with decreases in the delay before seeking care and in the probability of being referred. This means that people from households with more financial resources can buy more VHI cards or use hospital care more readily.

− Total health expenditures divided by total provincial products, this proxy of the "**Quality**" is the proxy percentage of health care expenditures compare with the government revenues (how much % Provincial products). It represents quality of health care, at its least. The positive and negative effects in terms of health development are partly related to preventive and curative health services provided. It is often assumed by medical professionals that increasing resources to a highly efficient, qualified medical staff can, for example, not work effectively if they cannot provide things like essential drugs or basic equipment/tools as well as modern medical treatments for the work. Medical technology can be of critical importance also from a health care financing point of view as they make it possible to reduce or eliminate costly treatments without any proven effects. Modern techniques such as day care surgery has made it possible to replace costly inpatient treatments with equally good or better outpatient treatments at a much

lower cost. At the same time, IP stays can be shortened thanks to new medical treatments and strengthening of OP medical services. However, there are many standards for what makes appropriate quality. In low income countries, spending a few dollars per capita or a low percent of provincial products for health, the appropriate quality must, of course, be very different from rich countries using thousands of dollars per capita per year on health care. As the percentage of health expenditures per PP increases, the health sector can be improved by new technologies, skills, training for medical staff and construction. Then health care with high quality can be provided. Sharply, this is the health expenditure of a country. Some independent variables include health policy and health care system related to the health expenditures of provincial products. Health policy is a starting point for the consideration of the predictors of the utilization and satisfaction with medical care. It effects health policy by altering the utilization of and access to medical care that health policy makers often seek to evaluate. The health care system represents the supply side in the dimension of use of health care services. It denotes the arrangements made for the potential rendering of care to consumers. The adequacy of the supply of human resources, facilities, and specialized programs and services for health care, it includes both the volume and the distribution of medical resources in an area.

The OLS method was used to analyse the association of the factors effecting voluntary health insurance :

$$\text{Prob(JoinVHI)} = \beta_0 + \beta_1 \text{Out of pocket} + \beta_2 \text{Premi} + \beta_3 \text{Quality} + \mu$$

Where :

Prob(JoinVHI) is dependent variable.
Out of pocket, Premi, Quality: the explanatory variables(or regressors).
μ : The stochastic disturbance term.
β_0 is constant, and coefficients β_1, β_2, β_3, called the partial regression coefficients.

Multiple regression is used to study the effect of different factors on members of health insurance. These factors include user fees, premium, expenditure and income.

The voluntary health insurance enrollment may positively associate with user fees, expenditure, and income; premium is expected to negatively associate with members of Voluntary Health Insurance.

To determine which factors influenced the probability of people joining VHI, following hypothesis was made:

For the model analysis the hypothesis that a coefficient is different from zero by using the *p value* to assess the significance of each coefficient can be test with:

$H_0 : \beta_i = 0$

$H_1 : \beta_i \neq 0 \quad i = 1,2,3$

The meaning of this test is if the null hypothesis H_0 is true, the corresponding independent variable is not related to regression, and its value is useless. On the other hand, when alternative H_1 is true, it can be concluded that there is a relationship between that variable and regression.

To determine this the following process was used: Conduct a test with significance $\alpha = 0.05$ and at least 40 degrees of freedom.

Reject *Ho, if the computed p value for each coefficient* p<0.05

Accept *Ho* if p >0.05

After this process, the form of the regression can be known. Then, testing them for statistical significance with the level of significance $(\alpha) = 0.05$. The results of variables in the model expected on members of voluntary health insurance are presented in table below:

Variable		Expected sign
Out of pocket	(User fees or user charge)	(+)
Premi	(Premium of Voluntary health insurance)	(-)
Quality	(Health care expenditures/Provincial product)	(+)

(Justification is presented at the formula explanations, section 4.2.3)

Data of 8 provinces for 5 years as :

Obs	Parameters				
(1 to 40)	Prob(VHI)	Prob(UF)	Pay out of pocket	Premi	Quality
1993[8 provinces]					
1994[8 provinces]					
1995[8 provinces]					
1996[8 provinces]					
1997[8 provinces]					

$$\text{Utilization} \quad = h \frac{VHI_{patients}}{Pop} + k \frac{Out\ of\ pocket_{patients}}{Pop} \qquad \{2\}$$

Calculate h, k :

$$VHIvisits = h . VHIpop$$

Where : h Average number of visits made by people with VHI

Ratio = VHIvisits / Population

$$Ufvisits = k. Ufpop$$

Where : k. Average number of visits made by people with user charge.

Ratio = Ufvisits/ Population

In cases where $h > k$, it means that VHI members went to visits hospital more than people who paid out of their pocket, since VHI members do not have to pay for the cost of treatment they can receive the health care services as well. On the othe hand, people who pay for the user charge, when they get sick, they have to be concern with their ability to pay before they go to the hospital, even it's needed. This scheme might favorable for the high-income group. From the results, the premium and level of user charge can be adjusted.

If $h < k$, it means that VHI members went to visits hospital less than people who paid out of their pocket in comparision with the same total population. Its represent the ratio of VHI and population. It also, means utilization of health care is not much as who pay out of their pocket. This is weakness of VHI scheme, not cover as much of population in the whole country.

Data utilization of health care for 5 years in 8 provinces are selected :

Obs	Parameters		
(1 to 40)	UTL	VHI visits	Out of pocket visits
1993[8 provinces]			
1994[8 provinces]			
1995[8 provinces]			
1996[8 provinces]			
1997[8 provinces]			

Assumption for non-overlapping of patient under VHI and out of pocket:

User fees are emphasized because private out-of-pocket expenditures for health in Vietnam could lead to the exclusion of the poor from access to health care. Rethinking user fee policies is particularly appropriate because they can indeed be designed to improve both quality and equity in the delivery of health care. Charging user fees clearly affects the use of health services, but the negative impact of prices on the demand for services can be greatly offset, sometimes completely, by improving the quality of services offered. This offsetting mechanism affects even the poorest households.

Health insurance is emphasized because this type of insurance enables many people to pool their resources to provide coverage for catastrophic illness or injury. Catastrophic events that are beyond the control of the individual are the easiest and cheapest to insure, because the probability of their occurring is low. In the process, insurance can facilitate greater equity through reallocation of public funds for public goods and services, as well as through subsidies targeted to the poor. Without access to such insurance, many people would be unable to obtain costly treatment or would have to incur major debts to pay hospital bills.

A related concern is that poor people can be expected to use modern health care facilities (as well as heath care in general) less than wealthier groups, because the burden of price changes is more significant when household incomes are low.

The fact that household expenditures and decisions regarding the use of health care has contributed importantly to the understanding of the choice process.

In Vietnam, people without a health insurance card cannot pay for health care at the same rate as health insurance member. It is a rule of Vietnam Health Insurance office that these people have to use the user fees scheme and pay out of their pocket.

When Voluntary Health Insurance members get sick, the hospital will provide the health care services that is needed, with the same quality as other schemes. The members do not pay for any items at all. Thus, Voluntary Health Insurance members do not need go to user fees scheme and pay out of their pocket for the same health care services will be provided.

According to what was mentioned above , it can be assumed that there is no overlapping of patients under voluntary health insurance scheme and payout of pocket in Vietnam.