

CHAPTER III

RESEARCH METHODOLOGY

This chapter consists of eight parts such as operational definition, conceptual framework, research design, and methodology for conduct the study.

3.1. OPERATIONAL DEFINITIONS

Commercial sex worker(CSW)

: refers to those who sell sex to their client. CSWs who sell sex directly in the brothel, are called 'Direct CSW'; but for those who work as ,say bar girl or massager and they sell sex at the same time, are called 'Indirect CSW'. CSWs could be both sex female and male .

Outreach program to CSWs

: refers to program which provide health education on HIV/AIDS/STD and condom promotion to CSWs at their working place.

Outreach worker

: Health staff who is responsible in Outreach program

Peer educator

:CSWs who were selected and trained to be health educator. Peer educator work along with Outreach worker

Always condom use

:The word 'Always' here means every time or 100%, in Behavioral study 'condom use of CSWs' is not mean that CSWs use female condom but refers to the requirement to their client to use condom in order the assure that their sexual practice is safe. The frequency of using a condom of CSWs during sexual intercourse with client were classify into four categories such as always used, often used, sometime used and never use.

Output

: refers to the result obtained at program level by through the execution of activities using program resources. Program output includes functional area output and service area output. For outreach program, the functional area output are number of staffs (outreach worker and peer educator) trained and materials developed; and the service area output are the number of CSWs educated by the program.

Outcome

: refers to the set of ultimate results expected to occur at the population level due to the program activities and generation of program output. Outcome of the outreach program are the increase in knowledge and behavior change to word safe behavior which can prevent from HIV/STD infection.

Performance of outreach program

: refers to the capacity to produce desired outputs and outcomes with a minimum expenditure of energy, time or resources.

Sustainability of a program

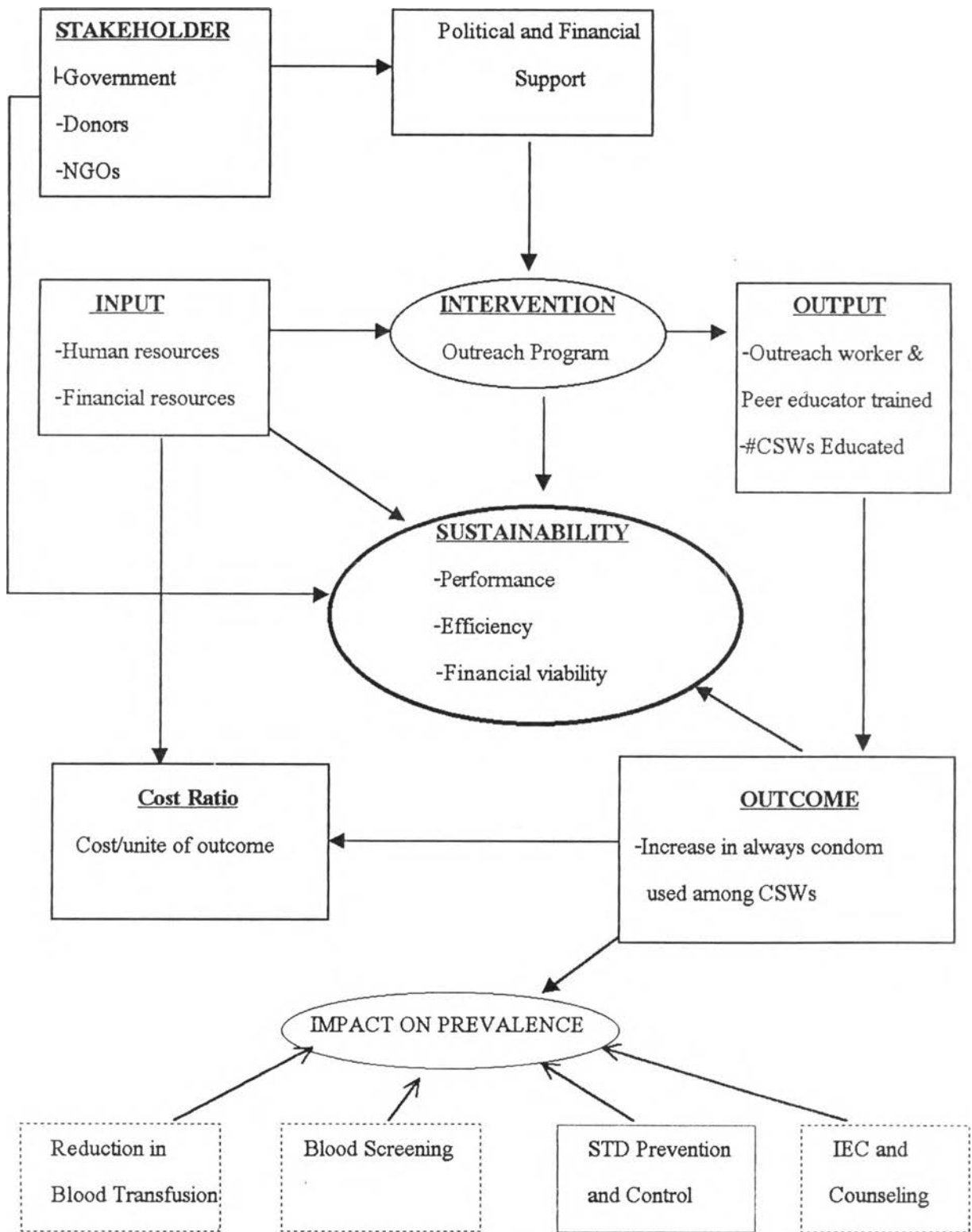
: refers to the production of program output and outcome at which inputs are available with uninterrupted. Usually the sustainability of outreach program depends on three dimensions, performance, efficiency and financial viability.

3.2. CONCEPTUAL FRAMEWORK

This is an empirical study which seeks to describe and identify relationships between program factors as a precursor for recommending action. There are many interventions that might have impact on prevalence of HIV in the country, such as reduction in blood transfusion, blood screening, STD prevention and control, IEC and counseling...etc.

This study will focus only one intervention namely 'Outreach program to direct female commercial sex workers'. The aim is to evaluate the program by looking into some aspects such as human resources and costs, output, outcome, and financial viability. Finally derived from above result, we will analyzes further on sustainability issues of the program for the future.

Fig 3.1 : CONCEPTUAL FRAMEWORK



3.3. RESEARCH DESIGN

This study consists of three parts:

1. Review all activities of the outreach program during the first year which were documented at National AIDS Program and at Provincial AIDS Office in order to calculate the total cost incurred and classify by source of funding.
2. Behavioral Survey on direct female commercial sex workers (Cross sectional). This survey will measure the level of behavior change among CSWs which contribute to the outreach program.
3. Organizational analysis by interview with key informants (Cross sectional) such as:
 - Chairman of Provincial AIDS Committee
 - Head of Provincial Police Department
 - Director of Provincial Health Department
 - Director of Provincial AIDS Office
 - Outreach workers and
 - Peer educators

This paper will provide the whole methodology to conduct the three parts of the study, but data analysis includes only the first two parts of the study and the third part remain the methodology approach.

3.4. BEHAVIORAL SURVEY

Behavioral Survey was conducted to measure the knowledge, attitude, and practice toward HIV/AIDS/STD of direct female CSWs who were educated by outreach program. This survey aims at measuring the level of behavior change that contribute to the outcome of outreach program. Since behavior of people change over time, we should, if possible, conduct the Behavioral Survey every year, so that we can see the trend of behavior change of the people compare with the trend of prevalence of infection as well.

Due to time and budget constraints, new data collection for the present study may not possible. So that the data used for analysis in this paper was from a study on program review of outreach program to direct female CSWs in Cambodia which was conducted in late 1996 by National AIDS Program under direction of Dr. Tia Phalla, program director of National AIDS Program. As a team member, I deeply involved in data collection which was conducted in five selected province with expected sample

size more than six hundreds; but because of missing data and invalidity of some variable, the final sample size valid for analysis was only 480. The following are the statistical methodology of the survey.

1. Study population

Since outreach program to female sex workers has been implemented all over the country (in 20 provinces and 2 major cities), most brothels and CSWs have been reached by staffs of the program. Therefore the study population for Behavior survey is brothel-based commercial sex workers countrywide, but sample population include only those CSWs in five selected provinces.

2. Study Site

Geographically, Cambodia consists of 20 provinces and 2 capital cities which were devised into five different regions and in each region the number of the province is similar. Since behavior of CSWs in different regions are not the same, five provinces, one from each region, were randomly selected. Those five sites includes Phnom Penh, Sihanouk Vile (major cities), Battambang, Kampong Cham and Rattanakiri (provinces).

3. Sampling technique

It was random sampling , which is starting by :

- First is the randomly select 5 provinces from 5 different regions (1 province of 1 region) and then,
- Second randomly select number of brothel in each province.

4. Sample size

The sample size was determined on the estimated level of outcomes, such as % of always condom used, and the degree of confidence required to detect a significant change in this behavior over times. Since this behavioral study suppose to be repeated every year in order to compare from one year to another, the sample size was calculated by using the following formula:

$$n = D \frac{[Z_{\alpha} \sqrt{2P(1-P)} + Z_{\beta} \sqrt{P_1(1-P_1)+P_2(1-P_2)}]^2}{(P_2-P_1)^2}$$

- n : sample size
D : design effect

- Z_{α} : the z-score corresponding to the probability with which it is desired to be able to conclude that an observed change of size (P_2-P_1) would not have occurred by chance
- Z_{β} : the z-score corresponding to the degree of confidence with which it is desired to be certain of detecting a change of size (P_2-P_1) if one actually occurred.
- P_1 : the estimated proportion at the time of the first survey
- P_2 : the estimated proportion of change to be able to detect
- P : $(P_1+P_2)/2$

Since the intention is to be 80% confident of being able to detect a 9% point, at the 95% level of significance in the proportion of CSWs who always used condom. We set $P_1=.15$ and $P_2=.24$ ($P_2-P_1=9\%$). Let us assume a design effect $D=2$ since cluster design was used.

Inserting these values into the formula we obtain:

$$n = 2 \frac{[1.65\sqrt{2 \cdot .195(1-.195)} + .84\sqrt{.15(1-.15)+.24(1-.24)}]^2}{(.24-.15)^2}$$

$$n = \underline{480}$$

The sample size of each province selected was determined with proportion to the number of total number of sample population in the province. In case some brothels selected did not have enough CSWs as we expect to meet, new brothels were randomly selected to complete the required sample.

Table 3.1 : The sample size for each province selected

Province/cities	Population		Sample	
	Brothel	CSW	Brothel	CSW
1. Phnom Penh*	287	774	83	223
2. Battambang	63	230	18	67
3. Sihanouk Vile*	97	395	28	114
4. Kampong Cham	27	195	8	56
5. Rattanakiri	14	70	4	20
Total	448	1664	115	480

* City

5. Data collection

Data was collected through face to face interview with structured questionnaire. Interview were conducted inside brothels where CSWs live and supervisors were present at all time to insure that the interview was conducted in privacy and in appropriate sensitive manner.

Five interviewers, which were recruited from National AIDS Program and National STD center, were trained through one day interviewer training . The training was didactic on the purpose of the behavioral study, importance of confidentiality, interviewing on sexual behavior, interviewer skill and rules, and the study population. This training was also conducted interactively with the participant s and was alternated with classroom interviewing practice.

6. Questionnaires and variable

The questionnaire used for behavioral survey included the HIV prevention indicators which were developed and tested in several countries by the World Health Organization Global Program on HIV/AIDS for use in national monitoring of trend in HIV related knowledge, attitude, belief, and practice.

Experience with the Behavioral Survey in other countries found that a questionnaire that takes 15 to 20 minutes per respondent is best. Too short questionnaire was found that do not allow respondent to have a chance to get comfortable with interviewer which is necessary to interviewer ask personnel sexual behavior. Too long questionnaire was found to make the field work and data collection too expensive and slow (Pamina M. Gorbach, 1997).

The variables of the behavioral study on CSWs consist of the following:

1. Sociodemographic

- Age
- Nationality
- Native province
- Marital status
- Number of children to support
- Education
- Age at first sex
- Monthly income

2. Brothel dynamic

- Time involved in prostitution

- Causes of becoming a sex worker
- Number of CSWs in the same brothell
- Sex price
- Average number of client a day
- The way of getting paid from brothel owner
- Ppercentage of money received from the brothel owner
- Iindebted to the brothel owner

3. Knowledge, attitude, belief and practice

3.1 Practice

A- Condom use

- Number of client in the past 24 hours
- Condom used in the past 24 hours
- Number of condom use with last 10 clients
- Condom use in last client
- Frequency of condom use in past month with client
- Reasons for not using a condom with client
- Frequency to refuse client who are resistant to condom use
- Availability of condom
- Having regular customer
- Frequency of condom use with regular customer
- Having boy-friend or sweet-heart
- Frequency of condom use with boy-friend or sweet-heart

B- Sexual practice

- Vaginal sex with client in past 24 hours
- Oral sex with client in past 24 hours
- Anal sex with client in past 24 hours
- Number of days stop having sex while menstruating

3.2. Knowledge

- Ever heard about HIV/AIDS
- Transmission of HIV/AIDS
- Prevention from HIV/AIDS
- Treatment

3.3. Attitude and belief

- Level of belief whether

- AIDS is a big problem
- Afraid of getting AIDS
- Being CSWs is very risky to get AIDS
- Having sex without using a condom with client who pays double fee

4. Self-reported symptoms on STD and seeking treatment

- Ever had pain in urination in the past month
- Ever had vaginal discharge in the past month
- Ever had genital wart in the past month
- Seeking treatment
- Pregnancy since start to have sex for money
- HIV test in past year

5. Outreach program

- Source of information related HIV/AIDS
- Frequency of attending outreach Program session

6. Migration of CSWs

- Ever move to other place (within the province or other province)

Questions and wording were made in simple way and easy to understand . It were finalized after having pre-tested in the field. (See detailed questionnaire in appendix B).

3.5. INTERVIEW WITH KEY INFORMANTS

Since there are limitations of time, the result of the interview with key informants may not possible to be included in the analysis for this paper. The analysis includes only cost calculation and finding from behavioral study which may answer to some objectives of the study. The following are the methodology that for conducting data collection of interview with key informants.

The interview with key informants should be conducted in same five provinces that we had selected for Behavioral survey. The interview should be done with people from high ranking of the government to the program implementers who take part of responsibility in making outreach program possible. These key informants include :

- Chairman of Provincial AIDS Committee (PAC),
- Head of Provincial Police Department (PPD)
- Director of Provincial Health Department (PHD),

- Program manager of Provincial AIDS Office (PAO),
- Outreach worker and
- Peer educator.

It should be an in-depth interview with open ended questions. The interview should be conducted in a room where tape recorder are used to record the answer which would be helpful for the analysis.

A. Topic guide for interview with Chairman of PAC, Head of PPD and Director of PHD :

1. What are the health problems faced by the people in this province/city ?
(Observe whether HIV/AIDS is mentioned, otherwise ask the next question)
2. Do you think that HIV/AIDS is a major health problem in the province ?
3. Do you think sex industry is contributing to the spread of HIV/AIDS in your province ?
4. Does outreach program to CSWs contribute mainly in slowing down the epidemic of HIV/AIDS in the province ?
5. What kind of supports have you ever provided for the implementation the program ?
6. What are the obstacles that may affect the performance of the program ?
7. Are there any prostitution ban in your province in the past year during the implementation of the program?
8. What are your suggestion to improve the effectiveness of the program in this province ?

B. Topic guide for interview with Program manager of PAO and Outreach worker:

- Legislative and administrative back up
 - Level of support on legislation and policy from PAC, PPD and PHD to outreach program in the past year

- Enabling factors for Provincial AIDS Office to work with Outreach program
- The undesirable effect of prostitution ban on the performance of the outreach program
- Logistic and resources
 - Problem regarding condom (Quality, amount, and distribution)
 - Problem regarding IEC materials (content, amount and distribution)
 - Problem regarding manpower
 - number of staff
 - quality of staff (Knowledge and skill)
 - Incentive (amount and delivery)
 - Other problems and suggestion

C. Topic guide for interview with Peer educators

- Role and function of peer educator
- Further knowledge and skill needed
- Further materials needed
- Administrative and legislative problem
- Incentive
- Suggestion

3.6. COST ESTIMATION

Costs of outreach program are classified by activities and are calculated separately for each province. Total costs of the program are the sum of cost of 20 provinces, 2 major cities and National AIDS Program. We included only accounting costs from provider spent for the program. The purchasing price was use for the cost calculation instead of using shadow price which is not feasible due to limitation of time. Since the aim is to determine the cost of the implementation of the outreach program, any cost for survey components of the project will be excluded in the calculation.

Since National AIDS Program work as the head quarter who is responsible for preparing all activities and budget plans of 20 provinces and 2 major cities, almost all cost data of program implementation were recorded at National AIDS Program. However, in some cases where records are not available, an estimation by using expert opinions will be needed.

As outreach program was started to implement nation wide at the same time,

costs of program of 20 provinces and 2 major cities begun to incur at the same time as well. Total costs of outreach program are devised into two parts:

1. Recurrent cost which consists of the costs of personnel, supplies, and operating and maintaining capital item.
2. Capital costs which composes of the costs of vehicles, equipment, and building.

The costs data were summarized in table 3.2 in which all resources were listed.

Table 3.2: Cost items

Cost items	Subtotal
<u>1. Recurrent costs</u>	
- Personnel	----
- Supplies	----
- Operating and maintaining of	----
-Vehicle	----
-Equipment	----
-Building	----
<u>2. Capital costs</u>	
- Vehicles	----
- Equipment	----
- Building	----
TOTAL	----

3.6.1. Recurrent costs

1. Cost of personnel

Outreach program is ran by three groups of full-time personnel, from national and provincial level, such as outreach worker, health educator and peer educator. The full costs of personnel include monthly salary, yearly bonus (which was provided by government), incentive (from program budget), program supervision, and program evaluation.

Outreach worker and health educator are government staff who get monthly salary and yearly bonus from government. In addition these government staff also get incentive monthly from the program budget. For Peer educator on the other hand, they are hired by the program and get paid monthly from program budget only.

Expenditure for supervision and evaluation workshop are mainly on travel and allowance of personnel involved in the program.

2. Cost of supplies

Materials used as direct inputs into every activities of outreach program during the process of implementation were included in the calculation. Those material are mainly IEC material (Information, Education and Communication materials) and condom. The price of each items was determined according to the market price and the total costs of these supplies is the sum of total cost of each item.

Table 3.3 Total cost of supplies of Outreach program for the first year

Cost item	Amount	Unit price	Subtotal
1. Bag	-	-	-
2. Flipchart	-	-	-
3. T-shirt	-	-	-
4. Cap	-	-	-
5. Poster	-	-	-
6. Leaflet	-	-	-
7. Condom	-	-	-
Total			-

3. Operating and maintaining of capital items

There are three capital items that need to be operated and maintained regularly and cost incurred in that activities were calculated separately.

- The cost of operating and maintaining vehicle : Since motorbike were used in all province and cities for the program, the inputs involve in operating and maintaining of motorbike including fuel, lubricant, tires and spare parts were considered. The record of expenditure for them is not available at National AIDS Program and the calculation is based on the standard of provision of fuel and lubricant from the ministry of Health and consult with drivers and mechanics.

- The cost of operating and maintaining of building which include water, electricity and renovation.

-The cost of operating and maintaining equipment included only cost spend for repairing, spare parts and printer inks for computer and printer.

Table 3.4 Cost of operating and maintaining capital item

Cost item	Subtotal
1. Operating and maintaining vehicle	-
2. Operating and maintaining building	-
3. Operating and maintaining equipment	-
Subtotal	-

3.6.2 Capital cost

The capital costs consist of cost of vehicle, equipment, furniture, building, and training. As all capital items can be used for long period (useful life), its initial cost must be spread to every year as well. The cost incurred for each year were calculated as following steps:

- Identify all capital items and determine its price (market price)
- Estimate the useful life of each item by consulting with expert or technician.
- Find out the annual inflation rate and interest rate used by the economic planning office or finance ministry. If this is not available, check World Bank or other development bank project appraisals to see what rates they used.
- Calculate the annual cost of capital items as following:

Suppose that an item of equipment was purchased from the beginning of the program with initial cost C_0 and its useful life is n years; the inflation rate i remains unchanged through useful life of the equipment, the value of that equipment at the end of n year will be:

$$C_n = C_0 (1+i)^n \quad (1)$$

By the end of n^{th} year, the program need to have saved an amount equivalent to C_n in order to be able to replace the equipment. The program must not wait until the end of n year to do this but should spread the amount C_n (at the year n price) over the n years of the life time of the equipment. This mean that each year it should save an amount P_t whose total over the n years should add up to C_n at the end of the n^{th} year.

$$P_1 + P_2 + \dots + P_{n-1} + P_n = C_n \quad (2)$$

We know that amount P_t save at the end of t year is invested in the bank at an annual rate of interest r , it will thus be worth:

$$\begin{array}{ll}
P_1(1+r) & \text{at the end of second year;} \\
P_2(1+r)^2 & \text{at the end of third year;} \\
\vdots & \\
P_n(1+r)^{n-1} & \text{at the end of } n^{\text{th}} \text{ year.}
\end{array} \quad (3)$$

There are two methods to calculate the first year cost of capital items as following:

Method 1. If the future cost C_n is to be distributed not equally over the n years, the amount to be spent by the end of each year will take account of annual inflation rate, it will be:

$$\begin{array}{l}
P_2 = P_1(1+i) \\
P_3 = P_1(1+i)^2 \\
\vdots \\
P_n = P_1(1+i)^{n-1}
\end{array} \quad (4)$$

Substitute (1), (3) and (4) into equation (2), we will have:

$$C_0(1+i)^n = P_1(1+r)^{n-1} + P_1(1+r)^{n-2}(1+i) + \dots + P_1(1+r)(1+i)^{n-2} + P_1(1+i)^{n-1}$$

or

$$P_1 = \frac{C_0(r-i)[(1+i)/(1+r)]^n}{1-[(1+i)/(1+r)]^n} \quad (5)$$

Where

- P_1 : first year cost of equipment
- C_0 : initial cost of equipment
- i : inflation rate
- r : interest rate
- n : useful life of equipment

Suppose that the program bought a chair at the beginning at initial cost $C_0 = 65,280$ Riels, which has useful life $n=10$ years, inflation rate and interest rate in buying year were 9% and 10.2% respectively. With assumption that the rates of inflation and interest remain unchanged within the life time of the chair, the first year cost of the chair is:

$$P_1 = \frac{65,280(1.02-.9)[(1+.9)/(1+.102)]^{10}}{1-[(1+.9)/(1+.102)]^{10}}$$

$$P_1 = \underline{6.770 \text{ Riels}}$$

Method 2. If the future cost C_n is to be distributed equally over the n years, the amount P_t to be saved by the end of each year will give C_n/n at the end of n^{th} year (Guy Carin,1995). Thus we shall have:

$$P_n = C_n/n$$

$$P_{n-1} = C_n/n(1+r)$$

$$\vdots$$

$$P_2 = C_n/n(1+r)^{n-2}$$

$$P_1 = C_n/n(1+r)^{n-1}$$

Where

P_1 : first year cost of equipment

C_n : the future value of equipment at the end of n years

n : useful life of equipment

r : interest rate

Suppose that the program bought a chair at the beginning at initial cost $C_0 = 65,280$ Riels, which has useful life $n=10$ years, inflation rate and interest rate in buying year were 9% and 10.2% respectively. With assumption that the rates of inflation and interest remain unchanged within the life time of the chair, the first year cost of the chair is:

$$C_n = 65,280(1+.09)^{10}$$

$$C_n = 154,542 \text{ Riels}$$

$$P_1 = 154,542/(10*(1+.102)^{10-1})$$

$$P_1 = 6,448 \text{ Riels}$$

Since the distribution of future cost C_n of outreach program is not equally over the period of n years, method 1 was use for the calculation of first year cost of capital items in this study.

Table 3.5 : Calculation of the annual value of capital items

Capital items	Interest rate(r)	Initial cost(C_0)	Useful life(n)	Future cost(C_n)	First year cost(P_1)
Vehicle	-	-	-	-	-
Equipment	-	-	-	-	-
Building	-	-	-	-	-
Training	-	-	-	-	-
Total					-

Alternatively, building can be treated as recurrent cost if annual rental value is available, because the rental cost embodies both depreciation and opportunity cost of that building.

3.6.3 Present value

If cost occurred at different years of intervention, both recurrent and capital costs must be converted into present value of a chosen year. With the assumption that all costs occurred at the beginning of each year, we will have the following formula:

$$C_0 = \sum_{t=0}^n C_t / (1+r)^t$$

Where

- C_0 : Present value
- C_t : Annual cost of year t
- n : Year where cost being calculated
- r : Interest rate

3.7. PERFORMANCE MEASUREMENT

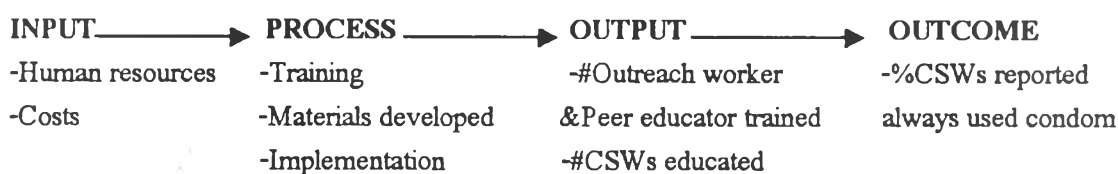
Performance refers mainly to the output and outcome achieved by outreach program after implementation.

Program output refers to the result obtained at program level through the execution of activities using program resources. In this case the output produced by outreach program to CSWs are two:

1. Functional area output such as number of 'Outreach workers' and 'Peer educators' trained by the program.
2. Service output such as number of 'CSWs' educated by the program.

Program outcome are the set of result expected to occur at the population level due to the program activities and generation of program output. Since outreach program is an intervention deal with health education and condom campaign on CSWs, the outcome of the program should be some indicators which show the level of change in sexual behavior. In this case we measure ' % of CSWs reported always used condom ' which is related to the performance of the outreach program.

Fig 3.2: The components of program impact



3.8. SUSTAINABILITY STUDY

There are 3 main dimensions which we will analyst for the sustainability of the program such as performance, efficiency, and financial viability. But, in this paper we could study only two dimensions, performance and financial viability of the program.

Performance of the program is the central dimension of sustainability because government and donor will never continue to finance health program which do not produce any output and outcome. Performance of outreach program is measured as level of coverage(see in previous chapter) which has been shown to be related with the change of behavior and impact on prevalence of infection. This output and outcome should be linked with the input(human resources and fund) used by the program at the level which is worthwhile and affordable. If the input is spent without producing any

outcome to contribute effectively to the impact on prevalence of infection, the costs of this intervention were then wasted resources which could have been spent for something more useful.

Financial viability is the most recognized dimension of sustainability. Since Outreach program to direct commercial sex workers is a health education program which can not produce any revenue, so that the analysis will focus mainly on cost sharing plan between different possible sources of finance of the program.