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APPENDICES

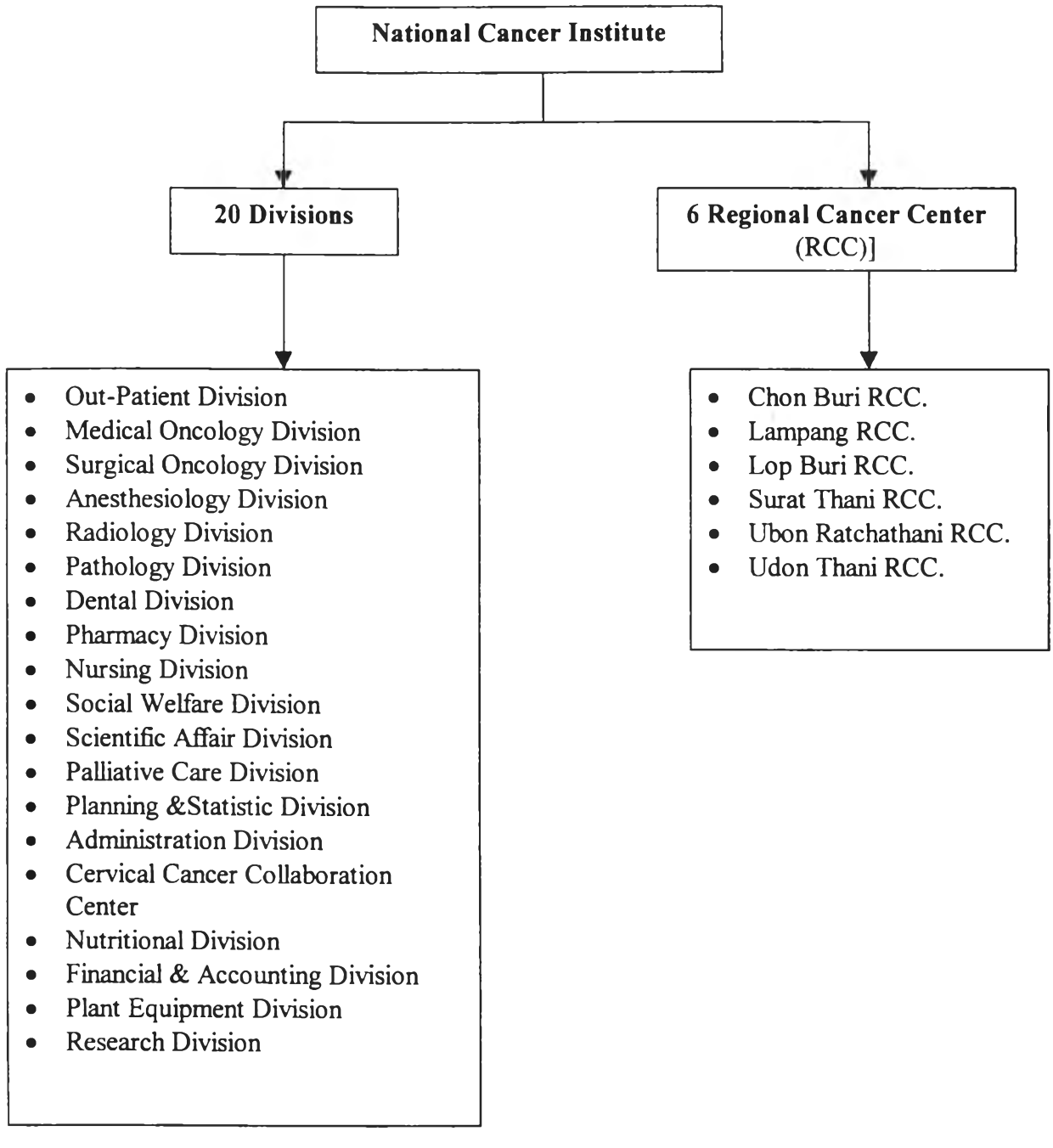
APPENDIX A

National Cancer Institute

Administration :

The Institute has functioned through its 20 divisions, and 6 Regional Cancer Center as shown in Figure

Figure A 1.1 The organization of National Cancer Institute



Budget :

The Institute receives annual appropriation from Government budget and assistant funds from Japanese Government under the Colombo Plan and also the donation budget from the patients and voluntary organizations every fiscal year. The technical assistance also has been received from WHO under the Development of Cancer Control Project.

Activities:

Since 1976, the NCI has rendered the in-patient services for 100 beds, with the availability of; Surgery, Chemotherapy and Radiotherapy. Since 1978 WHO proposed to strengthen the cancer control activities in Thailand, by sending the WHO task force to work with the National Team on Cancer Control planning which will enable expansion of cancer control activities throughout the country.

Weekly tumor conference has been conducted at NCI to find out proper combined treatment to the best benefit of cancer cases.

NCI has published the quarterly Cancer Journal, distributed to physicians, researchers and related health personnel.

For education and training, the NCI had set up the Cytotechnician School to serve the demand of the country for cytotechnicians and also cooperated with the Department of Medical Services to set up the Medical Records Librarian School for training personnel in medical statistics. There are occasionally short course training for nurses and special lectures in cancer for professional and the public as well.
The Institute has been working progressively in diagnostic and treatment, research activities training and public education in the field of cancer.

Responsibility and Activities of Radiology Division:

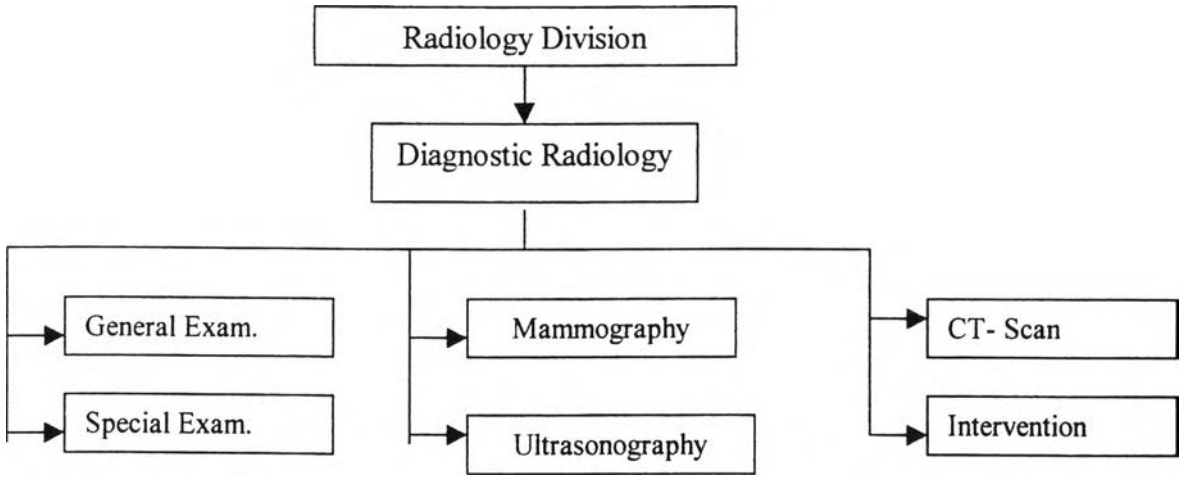
Radiology Division has it's function as follows:

- Administration in and out - patient for diagnosis and treatment.
- Technical diagnosis and treatment dealing with machine.

- Investigate brain, thyroid, liver, kidney bone etc.
- Plan localized lesion as well as fraction before treatment.
- Advice the patients pre and post radiation treatment.

The functional structure of Radiological Division is shown is Figure as follow:

Figure A 1.2 The function structure of Radiological Division, National Cancer Institute



National Cancer Institute

Department of Medical Services
Ministry of Public Health
RamaVI Road, Bangkok

National Cancer Institute has been established since 1959 with the following objectives:

1. To be the center for collecting and disseminating knowledge on cancer in Thailand.
2. To service in early cancer detection of every systems of the body, including treatment and rehabilitation and promotion of health and prevention of cancer.
3. To conduct research and develop technology to increase efficiency and decrease expenditure in investigation and treatment of cancer to be applied thoroughly.
4. To give education and training on cancer to physicians, nurses, and allied health personnel from other sectors of Ministry of health and other related offices.
5. To disseminate of knowledge and health education to public concerning with cancer indicating the benefit of early cancer detection and accurate treatment.
6. To be as collaborating center for various institutes where investigations and treatment of cancer are available throughout the country including exchange of experiences and ideas with other international institutions.
7. To manage on setting up the network of center for prevention and control of cancer.
8. To set up the cancer hostel for patients to obtain continuation of services for procedures on investigation, treatment and rehabilitation after recovery of the patients.
9. To set up a group of physicians, nurses and scientists to advise and lecture on prevention and control of cancer to various sectors in provincial areas.
10. To set up a team for treatment on cancer to support the centers of prevention and control of cancer in provincial area to be efficient in running work since the beginning until able to perform by themselves.

APPENDIX B

Questionnaire and Record Forms

Form Q1

Questionnaire for patients who utilize mammography screening

Please put ✓and fill in □ for the appropriate answer

1. Hospital Number.....
2. Age .....Year
3. Marital status □ 1. Single □ 2. Married □ 3. Widow □ 4.Separated
4. Education □ 1. Elementary □ 2. Lower-secondary
   □ 3. Upper-secondary □ 4. Vocational
   □ 5. Bachelor's □ 6. > Bachelor's
   □ 7. Others (Please specify) .....
5. Occupational
   □ 1. Civil servant and State enterprise □ 2. General labor
   □ 3. Trader □ 4. Workmen
   □ 5. Agriculture □ 6. Unemployed
   □ 7. Others (Please specify) .....
6. Household income /month
   □ 1. <10,000 Baht/month □ 2. 10,000-25,000 Baht/month
   □ 3. 25,001-50,000 Baht/month □ 4. 50,001-75,000 Baht/month
   □ 5. 75,001-100,000 Baht/month □ 6. >100,000 Baht/month
7. Domicile Province..... Transportation cost ..... Baht
8. Payment mechanism
   □ 1. Out-of-pocket..... Baht □ 2. CSMBS and Public enterprise
   □ 3. Health insurance+ Out of pocket □ 4.Private Health Insurance
   □ 5. Social Security Scheme □ 6. Welfare from employer
   □ 7. Low income card □ 8. Health card
   □ 9. Others (Please specify) .....
9. Charge for mammography screening ..... Baht
10. Charge for the other services (except question No.9) For Example .....
    .....= ..... Baht
11. The real charge ..... Baht Reducing charge/Public welfare..... Baht
12. Have you ever had mammogram? □ 1.No □ 2. Yes

If you had, when you had your recent mammogram. □ last year □ last 2 years
□ in past 5 years □ more than 5 year □ cannot remember

13. Reasons to use mammogram (you can answer more than one choice)
    □ 1. Routine checkup
    □ 2. Breast self examination and found abnormal
    □ 3. History of breast cancer in a relative
    □ 4. Referred from other hospitals
    □ 5. Physician reccomend
    □ 6. Abnormal from clinical breast examination and referred
    □ 7. Relative or friend or others recommend
    □ 8. Others (Please specify) .....
14. Reason for selection to utilize mammogram at this hospital
    □ 1. No hospital nearby my house □ 2. No trust the nearest hospital
    □ 3. Have relative and someone to available here
    □ 4. To faith in this hospital in quality and price
    □ 5. Others (Please specify) .....
15. Result of mammogram test
    □ 1.normal □ 2.Borderline/Need investigate more
    □ 3. Breast cancer □ 4. Benign tumor

Form Q2

Questionnaire for patients who utilize other services except mammography screening (only female)

Please put ✓and fill in ☐ for the appropriate answer

1. Hospital Number.....
2. Age .....Year
3. Marital status ☐ 1. Single ☐ 2. Married ☐ 3. Widow ☐ 4.Separated
4. Education ☐ 1. Elementary ☐ 2. Lower-secondary
   ☐ 3. Upper-secondary ☐ 4. Vocational
   ☐ 5. Bachelor's ☐ 6. > Bachelor's
   ☐ 7. Others (Please specify) .....
5. Occupational
   ☐ 1. Civil servant and State enterprise ☐ 2. General labor
   ☐ 3. Trader ☐ 4. Workmen
   ☐ 5. Agriculture ☐ 6. Unemployed
   ☐ 7. Others (Please specify) .....
6. Household income /month
   ☐ 1. <10,000 Baht/month ☐ 2. 10,000-25,000 Baht/month
   ☐ 3. 25,001-50,000 Baht/month ☐ 4. 50,001-75,000 Baht/month
   ☐ 5. 75,001-100,000 Baht/month ☐ 6. >100,000 Baht/month
7. Domicile Province..... Transportation cost ..... Baht
8. Have you ever had mammogram? ☐ 1.No ☐ 2. Yes

If you had never had mammogram before, please answer the next questions

9. Reasons for non-use mammogram (you can answer more than one choice)
   ☐ 1. Expensive
   ☐ 2. Out-of-pocket, cannot reimburse
   ☐ 3. No time
   ☐ 4. Don't mammogram before
   ☐ 5. Shy and afraid
   ☐ 6. Know well about mammogram but no essential to do now
   ☐ 7. No family history
   ☐ 8. No probability to get breast cancer
   ☐ 9. Don't know where to do
   ☐ 10. Not easily to go to hospital
   ☐ 11. No recommend from physician, family of friend
   ☐ 12. Do it by myself
   ☐ 13. Used to examine by physician and no problem
   ☐ 14. Others (Please specify) .....
10. If you would like to utilize mammogram in the future, which gender of physician you choose.
   ☐ Male ☐ Female ☐ Male or Female
11. If you would like to utilize mammogram in the future, which payment mechanism you choose.
   ☐ 1. Out-of-pocket..... Baht ☐ 2. CSMBS and Public enterprise
   ☐ 3. Health insurance+Out-of-pocket ☐ 4.Private Health Insurance
   ☐ 5. Social Security Scheme ☐ 6. Welfare from employer
   ☐ 7. Low income card ☐ 8. Health card
   ☐ 9. Others (Please specify) .....

Labour Cost Record Sheet
Data collection during fiscal year.....
National Cancer Institute

No	Name	Duty	Salary (Baht/year)	Fringe benefit					Total	% Allocation	Total labour cost (Bt.per year)
				Hospitalization fee	OT	Allowance	School fee for dependents	Incremental fund for dependents			
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
										Total	

Material Cost Record Sheet
Data collection during fiscal year .....
National Cancer Institute

No	Item	Quantity of consumption	Allocation criteria	How to calculate cost	Material cost

Capital Cost Record Sheet
Data collection during fiscal year .....
National Cancer Institute

Equipment items	Qualtity	Cost/unit (Baht)	Capital cost (Baht)	Installation year	Inflation rate	Capital cost at that year price	Expected year life (Year)	Allocation criteria	Capital cost (Baht/year)	Capital cost (Baht/month)
								Total		

APPENDIX C

Calulation of Labour Cost

Table C.1 Labour Cost of the Mammographic unit at NCI in FY 1997

No	Position	Duty	Salary	Hospitalization fee	School fee for dependents	Total	% Allocation	Total labour cost (Bt.per year)	Total labour cost (Bt.per month)
1	Radiologist*	Ultrasound&Interpret film	326,160	21843	0	348,003	15	52,200.45	4,350.04
2	Radiologist*	Ultrasound&Interpret film	349,560	39055	0	388,615	30	116,584.50	9,715.38
3	Radiologist*	Ultrasound&Interpret film	293,760	56267	0	350,027	30	105,008.10	8,750.68
4	Nurse*	Mammography	270,720	14459.5	0	285,180	50	142,589.75	11,882.48
5	Nurse*	Mammography	175,200	4027.5	1640	180,868	20	36,173.50	3,014.46
6	Nurse*	Mammography	168,000	7622	0	175,622	20	35,124.40	2,927.03
7	Nurse*	Mammography	123,960	401.5	8520	132,882	20	26,576.30	2,214.69
8	Nurse*	Mammography	93,360	4993	0	98,353	20	19,670.60	1,639.22
9	Film-ProcessTechnician**	Develop film	49,200	0	0	49,200	69	33,948.00	2,829.00
10	Registrar***	X-ray register	104,280	0	0	104,280	3.49	3,639.37	303.28
11	Registrar***	X-ray register	49,200	0	0	49,200	3.49	1,717.08	143.09
12	Registrar***	X-ray register	49,200	0	0	49,200	3.49	1,717.08	143.09
13	Registrar***	X-ray register	49,200	0	0	49,200	3.49	1,717.08	143.09
14	Staff**	Find-keep film	49,200	0	0	49,200	69	33,948.00	2,829.00
15	Staff**	Find-keep film	49,200	0	0	49,200	69	33,948.00	2,829.00
								644,562.21	**53,713.52**

Note:

* The proportion of allocation criteria of the radiologists and nurses comes from interviewing and the schedule work of each person.

** The proportion of allocation criteria of these people are up to the proportion of their working about 2 jobs between mammogram and FCR.
The total film of mammogram are 5,791 film and FCR are 2,603 film. Therefore, the proportion of working with mammogram are equal 5,789 *100/8394 = 69%

*** The proportion of allocation criteria of the registrar groups are up to the number of the patient that utilize mammography screening(1,617 cases) and compare with the total patients that access at the Radiology Division (46,395 cases). Therefore, the proportion of working with mammogram are equal 1617*100/46,395 = 3.49%

FCR = Fuji Computed Radiography

Table C.2 Labour Cost of the Mammographic Unit at NCI in FY 1998

No	Position	Duty	Salary	Hospitalization fee	School fee for dependents	Total	% Allocation	Total labour cost (Bt.per year)	Total labour cost (Bt.per month)
1	Radiologist*	Ultrasound&Interpret film	348,000	25,006.0	0	373,006	15	55,950.90	4,662.58
2	Radiologist*	Ultrasound&Interpret film	363,240	46,137.0	0	409,377	30	122,813.10	10,234.43
3	Radiologist*	Ultrasound&Interpret film	305,520	67,268.0	0	372,788	30	111,836.40	9,319.70
4	Nurse*	Mammography	282,240	7,319.0	0	289,559	50	144,779.50	12,064.96
5	Nurse*	Mammography	191,040	1,991.0	1640	194,671	20	38,934.20	3,244.52
6	Nurse*	Mammography	175,680	11,325.0	0	187,005	20	37,401.00	3,116.75
7	Nurse*	Mammography	136,560	286.5	8520	145,367	20	29,073.30	2,422.78
8	Nurse*	Mammography	98,280	7,156.0	0	105,436	20	21,087.20	1,757.27
9	Film-ProcessTechnician**	Develop film	49,200	0	0	49,200	74.86	36,831.12	3,069.26
10	Registrar***	X-ray register	117,960	0	0	117,960	5.03	5,933.39	494.45
11	Registrar***	X-ray register	49,200	0	0	49,200	5.03	2,474.76	206.23
12	Registrar***	X-ray register	49,200	0	0	49,200	5.03	2,474.76	206.23
13	Registrar***	X-ray register	49,200	0	0	49,200	5.03	2,474.76	206.23
14	Staff**	Find-keep film	49,200	0	0	49,200	74.86	36,831.12	3,069.26
15	Staff**	Find-keep film	49,200	0	0	49,200	74.86	36,831.12	3,069.26
								685,726.63	**57,143.89**

Note:

* The proportion of allocation criteria of the radiologists and nurses comes from interviewing and the schedule work of each person.

** The proportion of allocation criteria of these people are up to the proportion of their working about 2 jobs between mammogram and FCR.
The total film of mammogram are 8,598 film and FCR are 2,887 film. Therefore, the proportion of working with mammogram are equal 8,598 *100/11,485 = 74.86%

*** The proportion of allocation criteria of the registrar groups are up to the number of the patient that utilize mammography screening(2,414 cases) and compare with the total patients that access at the Radiology Division (47,948cases). Therefore, the proportion of working with mammogram are equal 2,414*100/47,948 = 5.03%

FCR = Fuji Computed Radiography

Table C.3 Labour Cost of the Mammographic Unit at NCI in FY 1999

No	Position	Duty	Salary	Hospitalization fee	School fee for dependents	Total	% Allocation	Total labour cost (Bt.per year)	Total labour cost (Bt.per month)
1	Radiologist*	Ultrasound&Interpret film	348,000	18,681	0	366,681	10	36,668.05	3,055.67
2	Radiologist*	Ultrasound&Interpret film	377,160	31,973	0	409,133	20	81,826.68	6,818.89
3	Radiologist*	Ultrasound&Interpret film	305,520	45,266	0	350,786	20	70,157.25	5,846.44
4	Radiologist*	Ultrasound&Interpret film	98,280	0	0	98,280	20	19,656.00	1,638.00
5	Radiologist*	Ultrasound&Interpret film	127,200	0	0	127,200	20	25,440.00	2,120.00
6	Radiologist*	Ultrasound&Interpret film	114,720	3,075	0	117,795	20	23,559.00	1,963.25
7	Nurse*	Mammography	430,440	21,600	0	452,040	50	226,020.00	18,835.00
8	Nurse*	Mammography	198,720	6,064	2470	207,254	20	41,450.80	3,454.23
9	Nurse*	Mammography	183,360	3,920	0	187,280	20	37,455.90	3,121.33
10	Nurse*	Mammography	144,960	517	8520	153,997	20	30,799.40	2,566.62
11	Nurse*	Mammography	98,280	2,830	0	101,110	20	20,222.00	1,685.17
12	Film-ProcessTechnician**	Develop film	49,200	0	0	49,200	81.61	40,152.12	3,346.01
13	Registrar***	X-ray register	117,960	2,018	0	119,978	6.24	7,486.63	623.89
14	Registrar***	X-ray register	49,200	0	0	49,200	6.24	3,070.08	255.84
15	Registrar***	X-ray register	49,200	0	0	49,200	6.24	3,070.08	255.84
16	Registrar***	X-ray register	49,200	0	0	49,200	6.24	3,070.08	255.84
17	Staff**	Find-keep film	49,200	0	0	49,200	81.61	40,152.12	3,346.01
18	Staff**	Find-keep film	49,200	0	0	49,200	81.61	40,152.12	3,346.01
								750,408.30	**62,534.03**

Note:

* The proportion of allocation criteria of the radiologists and nurses comes from interviewing and the schedule work of each person.

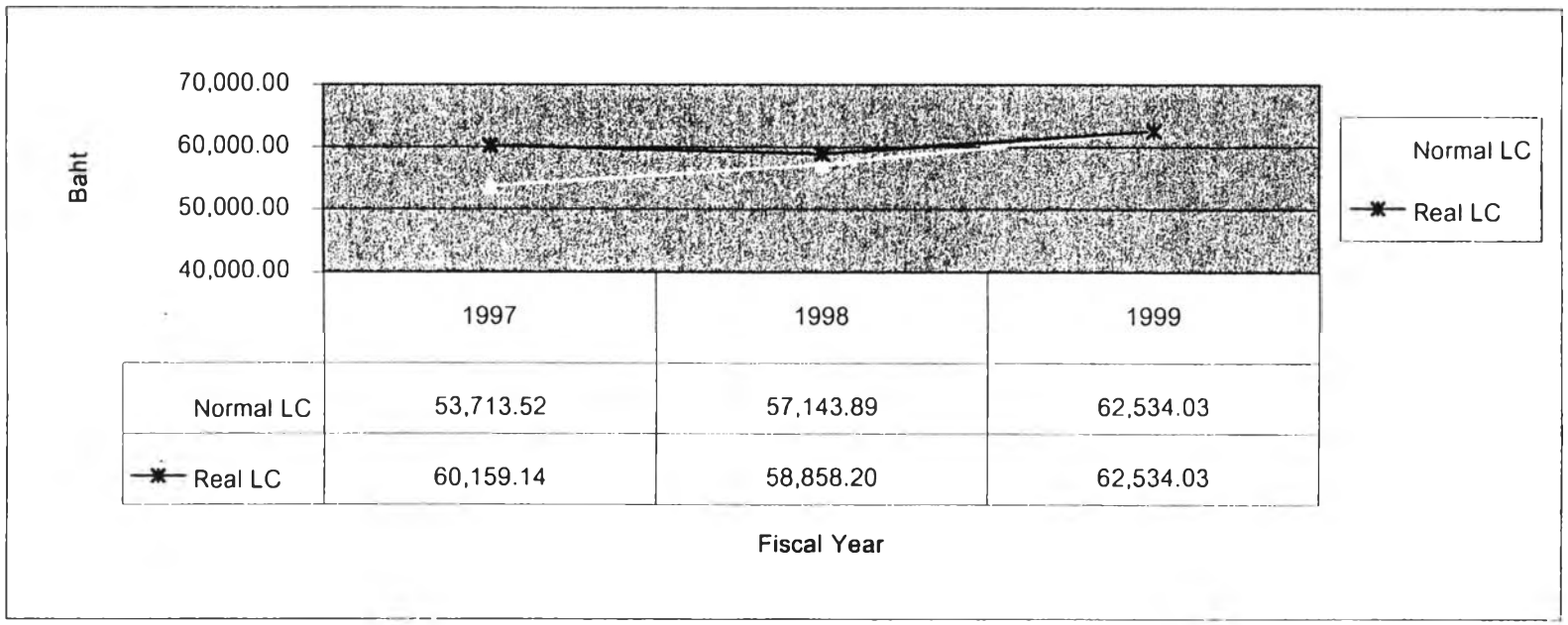
** The proportion of allocation criteria of these people are up to the proportion of their working about 2 jobs between mammogram and FCR.
The total film of mammogram are 11,403 film and FCR are 3,579 film. Therefore, the proportion of working with mammogram are equal 11,403 *100/14,982 = 76.11%

*** The proportion of allocation criteria of the registrar groups are up to the number of the patient that utilize mammography screening(3,088 cases) and compare with the total patients that access at the Radiology Division (49,503 cases). Therefore, the proportion of working with mammogram are equal 3,088*100/49,503 = 6.24%

FCR = Fuji Computed Radiography

Table C.4 Labour Cost of the Mammographic Unit at NCI in FY 1997-1999 at 1999 price

Year	Total labour cost (Bt.per year)	Total labour cost (Bt.per month)	Inflation rate*	Total LC at 1999 price (Bt.per year)	Total LC at 1999 price (Bt.per month)
1997	644,562.21	53,713.52	1.12	**721,910**	60,159.14
1998	685,726.63	57,143.89	1.03	**706,298**	58,858.20
1999	750,408.30	62,534.03	1	**750,408**	62,534.03



APPENDIX D

Calculation of Material Cost

Table D.1 Material Cost of Electricity at the Mammographic Unit, NCI, in FY 1997

Item	power comsumption	time (hr)	No of Patient	Office day in 1998	Total time(hr)	power use(unit)
1.Mammography						
- Operating time	4000 watt/sec	4 sec/patient	1617		107.80	431.20
- Standby	30 watt/hr	3 hr/day		247	741.00	22.23
2. Kodak Processor	3300 watt/hr	8 hr/day		247	1,976.00	6,520.80
3. Ultrasound No.1	1725 watt/hr	3 hr/day		247	741.00	1,278.23
4. Ultrasound No.2	1725 watt/hr	3 hr/day		247	741.00	1,278.23
5. Fluorescent (20 bulbs)	40 watt/hr/bulb	11 hr/day		247	2,717.00	2,173.60
6 Air condition(6 machines)	18,000 BTU* or 1760 watt/h	8 hr/day		247	1,976.00	20,866.56
						32,570.84

Note : How to calculated BTU to unit as follow.

1. Air condition 12,000 BTU (1 Ton) uses 5 ampere-hour. (From: The Metropolitan Power Board)
2. So, Air condition 18,000 BTU uses 8 ampere-hour
3. From the formular P (watt) = V (volt) * I (ampere-hour) = 220 V * 8 ampere-hour = 1760 watt

Table D.2 Material Cost of Electricity at the Mammographic Unit, NCI, in FY 1998

Item	power comsumption	time (hr)	No of Patient	Office day in 1998	Total time(hr)	power use(unit)
1.Mammography						
- Operating time	4000 watt/sec	4 sec/patient	2414		160.93	643.73
- Standby	30 watt/hr	3 hr/day		245	735.00	22.05
2. Kodak Processor	3300 watt/hr	8 hr/day		245	1,960.00	6,468.00
3. Ultrasound No.1	1725 watt/hr	3 hr/day		245	735.00	1,267.88
4. Ultrasound No.2	1725 watt/hr	3 hr/day		245	735.00	1,267.88
5. Fluorescent (20 bulbs)	40 watt/hr/bulb	11 hr/day		245	2,695.00	2,156.00
6 Air condition(6 machine	18,000 BTU* or 1760 watt/h	8 hr/day		247	1,976.00	20,866.56
						32,692.09

Note : How to calculated BTU to unit as shown in Table D.1

Table D.3 Material Cost of Electricity at the Mammographic Unit, NCI, in FY 1999

Item	power comsumption	time (hr)	No of Patient	Office day in 1999	Total time(hr)	power use(unit)
1.Mammography						
- Operating time	4000 watt/sec	4 sec/patient	3088		205.87	823.47
- Standby	30 watt/hr	3 hr/day		242	726.00	21.78
2. Kodak Processor	3300 watt/hr	8 hr/day		242	1,936.00	6,388.80
3. Ultrasound No.1	1725 watt/hr	3 hr/day		242	726.00	1,252.35
4. Ultrasound No.2	1725 watt/hr	3 hr/day		242	726.00	1,252.35
5. Fluorescent (20 bulbs)	40 watt/hr/bulb	11 hr/day		242	2,662.00	2,129.60
6 Air condition(6 machine	18,000 BTU* or 1760 watt/h	8 hr/day		247	1,976.00	20,866.56
						32,734.91

Note : How to calculated BTU to unit as shown in Table D.1

Table D.3 Electricity of the Mammographic Unit , NCI, in FY 1999

Item	power comsumption	time (hr)	No of Patien	ffice day in 19	Total time(hr	power use(unit)
1.Mammography						
- Operating time	4000 watt/sec	4 sec/patient	3088		205.87	823.47
- Standby	30 watt/hr	3 hr/day		242	726.00	21.78
2. Kodak Processor	3300 watt/hr	8 hr/day		242	1,936.00	6,388.80
3. Ultrasound No.1	1725 watt/hr	3 hr/day		242	726.00	1,252.35
4. Ultrasound No.2	1725 watt/hr	3 hr/day		242	726.00	1,252.35
5. Fluorescent (20 bulbs)	40 watt/hr/bulb	11 hr/day		242	2,662.00	2,129.60
6 Air condition(6 machine	18,000 BTU* or 1760 w	8 hr/day		247	1,976.00	20,866.56
						32,734.91

Note : How to calculated BTU to unit as shown in Table D.1

Table D.5 Material Cost of Telephone at the Mammographic Unit, NCI, in FY 1997-1999

Year	No. of personel	Times/day	Cost/unit	Office day	Telephone cost/year	Telephone cost/month
1997	15	30	3	247	333,450	27,787.50
1998	18	36	3	245	476,280	39,690.00
1999	18	36	3	242	470,448	39,204.00

Note : Assumption for 1 personel uses telephone 2 times/day (Data source : By interviewing the head of Mammographic unit, NCI)

Table D.6 Material Cost of Water Supply that Use for Film of Mammography in FY 1997-1999

Item/Year	1997	1998	1999
No. of film	5,791.00	8,597.00	11,403.00
Volume of water supply (cubic metre)	0.5791	0.8597	1.1403
Rate of water supply (Baht/month)	70.00	90.00	90.00
Cost of water supply (Baht/Year)	840.00	1,080.00	1,080.00
VAT (7-10%)	68.25	108	83.70
Service charge (50 Baht/month)	600.00	600.00	600.00
Total cost of water supply (year)	1,508.25	1,788.00	1,763.70
Total cost of water supply (month)	125.69	149.00	146.98

Note : The volume of water supply for 1 film strip = 100 cc or 0.0001 cubic metre
The rate of water supply have a fix rate when the consumer use water supply less than 10 cubic metre
VAT calculated from the real rate that the government annouced at that time as follow:

- VAT 7% : 1 JAN 1997-15 AUGUST 1997
- VAT 10% ; 16 AUGUST 1997-31 MARCH 1999
- VAT 7% : 1 APRIL 1999 - NOW

Table D.7 Material Cost of Film & Reagent at the Mammographic unit, NCI, in FY 1997

Month	Film	Price/1 film strip	*Cost of Film*	Price of Fix./1 FS	*Cost of Fix. Reagent*	Price of Dev/1 FS	*Cost of Dev. Reagent*	Total cost (Film+Fix.+Dev)
January	178	19	*3,382*	3.432	*611*	4.268	*760*	**4,752.60**
February	130	19	*2,470*	3.432	*446*	4.268	*555*	**3,471.00**
March	588	19	*11,172*	3.432	*2,018*	4.268	*2,510*	**15,699.60**
April	578	19	*10,982*	3.432	*1,984*	4.268	*2,467*	**15,432.60**
May	430	19	*8,170*	3.432	*1,476*	4.268	*1,835*	**11,481.00**
June	294	19	*5,586*	3.432	*1,009*	4.268	*1,255*	**7,849.80**
July	265	19	*5,035*	3.432	*909*	4.268	*1,131*	**7,075.50**
August	678	19	*12,882*	3.432	*2,327*	4.268	*2,894*	**18,102.60**
September	707	19	*13,433*	3.432	*2,426*	4.268	*3,017*	**18,876.90**
October	723	19	*13,737*	3.432	*2,481*	4.268	*3,086*	**19,304.10**
November	661	19	*12,559*	3.432	*2,269*	4.268	*2,821*	**17,648.70**
December	559	19	*10,621*	3.432	*1,918*	4.268	*2,386*	**14,925.30**
Total	**5,791**	**228**	***110,029***	**41.184**	***19,875***	**51.216**	***24,716***	**154,619.70**

Note :

1. Film 1 box has 100 film-strip = 1,900 Baht. So, the price of 1 film-strip equals 19 Baht
2. The price of Fixer Reagent for 1 box is 1,144 Baht, and it contains 20,000 cc.
   For 1 film-strip uses 60 cc of Fixer Reagent, so, the cost for this reagent for 1 film-strip = 1,144*60/20,000 = 3.432 Baht
3. The price of Developer Reagent for 1 box is 2,134 Baht, and it contains 20,000 cc.
   For 1 film-strip uses 40 cc of Developer Reagent, so, the cost for this reagent for 1 film-strip = 2,134*40/20,000 = 4.268 Baht

Table D.8 Material Cost of Film & Reagent at the Mammographic unit, NCI, in FY 1998

Month	Film	Price/1 film strip	*Cost of Film*	Price of Fix./1 FS	*Cost of Fix. Reagent*	Price of Dev/1 FS	*Cost of Dev. Reagent*	Total cost (Film+Fix.+Dev)
January	671	19	*12,749*	3.432	*2,303*	4.268	*2,864*	**17,915.70**
February	403	19	*7,657*	3.432	*1,383*	4.268	*1,720*	**10,760.10**
March	722	19	*13,718*	3.432	*2,478*	4.268	*3,081*	**19,277.40**
April	640	19	*12,160*	3.432	*2,196*	4.268	*2,732*	**17,088.00**
May	595	19	*11,305*	3.432	*2,042*	4.268	*2,539*	**15,886.50**
June	881	19	*16,739*	3.432	*3,024*	4.268	*3,760*	**23,522.70**
July	727	19	*13,813*	3.432	*2,495*	4.268	*3,103*	**19,410.90**
August	864	19	*16,416*	3.432	*2,965*	4.268	*3,688*	**23,068.80**
September	932	19	*17,708*	3.432	*3,199*	4.268	*3,978*	**24,884.40**
October	789	19	*14,991*	3.432	*2,708*	4.268	*3,367*	**21,066.30**
November	612	19	*11,628*	3.432	*2,100*	4.268	*2,612*	**16,340.40**
December	762	19	*14,478*	3.432	*2,615*	4.268	*3,252*	**20,345.40**
Total	**8598**	**228**	***163,362***	**41.184**	***29,508***	**51.216**	***36,696***	**229,566.60**

Note
How to calculate the cost of film strip, Fixer reagent, and Developer reagent are the same as shown in Table D.7

Table D.9 Material Cost of Film & Reagent at the Mammographic unit, NCI, in FY 1999

Month	Film	Price/1 film strip	*Cost of Film*	Price of Fix./1 FS	*Cost of Fix. Reagent*	Price of Dev/1 FS	*Cost of Dev. Reagent*	Total cost **(Film+Fix.+Dev)**
January	790	19	*15,010*	3.432	*2,711*	4.268	*3,372*	**21,093.00**
February	768	19	*14,592*	3.432	*2,636*	4.268	*3,278*	**20,505.60**
March	1008	19	*19,152*	3.432	*3,459*	4.268	*4,302*	**26,913.60**
April	1052	19	*19,988*	3.432	*3,610*	4.268	*4,490*	**28,088.40**
May	915	19	*17,385*	3.432	*3,140*	4.268	*3,905*	**24,430.50**
June	1074	19	*20,406*	3.432	*3,686*	4.268	*4,584*	**28,675.80**
July	1069	19	*20,311*	3.432	*3,669*	4.268	*4,562*	**28,542.30**
August	1292	19	*24,548*	3.432	*4,434*	4.268	*5,514*	**34,496.40**
September	1058	19	*20,102*	3.432	*3,631*	4.268	*4,516*	**28,248.60**
October	626	19	*11,894*	3.432	*2,148*	4.268	*2,672*	**16,714.20**
November	808	19	*15,352*	3.432	*2,773*	4.268	*3,449*	**21,573.60**
December	943	19	*17,917*	3.432	*3,236*	4.268	*4,025*	**25,178.10**
Total	**11403**	**228**	***216,657***	**41.184**	***39,135***	**51.216**	***48,668***	**304,460.10**

Note

How to calculate the cost of film strip, Fixer reagent, and Developer reagent are the same as shown in Table D.7

Table D.10 Material Cost of the Mammographic Unit at NCI in FY 1997 at 1999 price

Month	Electricity	Water supply	Telephone	Film & Reagent	Total Material cost	Inflation rate	MC at 1999 price
January	6,067.05	125.69	27,787.50	4,752.60	38,732.83	1.12	**43,380.77**
February	6,067.05	125.69	27,787.50	3,471.00	37,451.23	1.12	**41,945.38**
March	6,067.05	125.69	27,787.50	15,699.60	49,679.83	1.12	**55,641.41**
April	6,067.05	125.69	27,787.50	15,432.60	49,412.83	1.12	**55,342.37**
May	6,067.05	125.69	27,787.50	11,481.00	45,461.23	1.12	**50,916.58**
June	6,067.05	125.69	27,787.50	7,849.80	41,830.03	1.12	**46,849.64**
July	6,067.05	125.69	27,787.50	7,075.50	41,055.73	1.12	**45,982.42**
August	6,067.05	125.69	27,787.50	18,102.60	52,082.83	1.12	**58,332.77**
September	6,067.05	125.69	27,787.50	18,876.90	52,857.13	1.12	**59,199.99**
October	6,067.05	125.69	27,787.50	19,304.10	53,284.33	1.12	**59,678.45**
November	6,067.05	125.69	27,787.50	17,648.70	51,628.93	1.12	**57,824.41**
December	6,067.05	125.69	27,787.50	14,925.30	48,905.53	1.12	**54,774.20**
Total	72,804.56	1,508.25	333,450.00	154,619.70	562,382.51		**629,868.41**

Table D.11 Material Cost of the Mammographic unit at NCI in FY 1998 at 1999 price

Month	Electricity	Water supply	Telephone	Film & Reagent	Total Material cost	Inflation rate	MC at 1999 price
January	6,362.90	149.00	39,690.00	17,915.70	64,117.60	1.03	**66,041.13**
February	6,362.90	149.00	39,690.00	10,760.10	56,962.00	1.03	**58,670.86**
March	6,362.90	149.00	39,690.00	19,277.40	65,479.30	1.03	**67,443.68**
April	6,362.90	149.00	39,690.00	17,088.00	63,289.90	1.03	**65,188.60**
May	6,362.90	149.00	39,690.00	15,886.50	62,088.40	1.03	**63,951.06**
June	6,362.90	149.00	39,690.00	23,522.70	69,724.60	1.03	**71,816.34**
July	6,362.90	149.00	39,690.00	19,410.90	65,612.80	1.03	**67,581.19**
August	6,362.90	149.00	39,690.00	23,068.80	69,270.70	1.03	**71,348.82**
September	6,362.90	149.00	39,690.00	24,884.40	71,086.30	1.03	**73,218.89**
October	6,362.90	149.00	39,690.00	21,066.30	67,268.20	1.03	**69,286.25**
November	6,362.90	149.00	39,690.00	16,340.40	62,542.30	1.03	**64,418.57**
December	6,362.90	149.00	39,690.00	20,345.40	66,547.30	1.03	**68,543.72**
Total	76,354.84	1,788.00	476,280.00	229,566.60	783,989.44		**807,509.12**

Table D.12 Material Cost of the Mammographic Unit at NCI in FY 1999 at 1999 price

Month	Electricity	Water supply	Telephone	Film & Reagent	Total Material cost	Inflation rate	MC at 1999 price
January	6,405.37	146.98	39,204.00	21,093.00	66,849.35	1.00	**66,849.35**
February	6,405.37	146.98	39,204.00	20,505.60	66,261.95	1.00	**66,261.95**
March	6,405.37	146.98	39,204.00	26,913.60	72,669.95	1.00	**72,669.95**
April	6,405.37	146.98	39,204.00	28,088.40	73,844.75	1.00	**73,844.75**
May	6,405.37	146.98	39,204.00	24,430.50	70,186.85	1.00	**70,186.85**
June	6,405.37	146.98	39,204.00	28,675.80	74,432.15	1.00	**74,432.15**
July	6,405.37	146.98	39,204.00	28,542.30	74,298.65	1.00	**74,298.65**
August	6,405.37	146.98	39,204.00	34,496.40	80,252.75	1.00	**80,252.75**
September	6,405.37	146.98	39,204.00	28,248.60	74,004.95	1.00	**74,004.95**
October	6,405.37	146.98	39,204.00	16,714.20	62,470.55	1.00	**62,470.55**
November	6,405.37	146.98	39,204.00	21,573.60	67,329.95	1.00	**67,329.95**
December	6,405.37	146.98	39,204.00	25,178.10	70,934.45	1.00	**70,934.45**
Total	76,864.44	1,763.70	470,448.00	304,460.10	853,536.24		**853,536.24**

APPENDIX E

Calculation of Capital Cost

Table E.1 Capital Cost of the Mammographic unit at NCI in FY 1997

Equipment items	Qualtity	Cost/unit (Baht)	Capital cost (Baht)	Installation year	Inflation rate*	Capital cost at 1997 price	Expected year life** (Year)	Allocation criteria***	Capital cost**** (Baht/year)	Capital cost (Baht/month)
Building (rent)	60	6,000	360,000	1997	1.00	*360,000*	-	100	*360,000.00*	*30,000.00*
Mammography: Benette/contour	1	3,800,000	3,800,000	1995	1.06	*4,028,000*	10	100	*402,800.00*	*33,566.67*
Mammography: Benette/contour pl	-	-	-	-	-	-	-	-	-	-
Ultrasound	2	7,000,000	14,000,000	1995	1.06	*14,840,000*	10	33.65	*499,402.29*	*41,616.86*
Kodax Processor	1	700,000	700,000	1994	1.09	*763,000*	8	100	*95,375.00*	*7,947.92*
Computer set	-	-	-	-	-	-	-	-	-	-
Air conditioning******	6	285,000	1,710,000	NA	0.92	*1,573,200*	5	100	*314,640.00*	*26,220.00*
								Total	**1,672,217.29**	**139,351.44**

Note :

* Inflation rate calculated by the consumer price index for Bangkok and Vicinity of personal and medical care group at 1994 price (from: Trade and Economic Index Devision, Department of Internal Trade, Ministry of Commerce). In Table A 5.4 shows how to calculate the inflarate at the year 1997 already.

** Expected year life of Mammography, ultrasound and Kodax Processor equipment come from the experts' opinion that use in this hospital. Others comes form Standardize for computerized equipment that can use only 5 years.

*** Allocation criteria of all equipment except Ultrasound is 100% for mammography screening. For Ultrasound, this equipment use for breasts are 1,617 cases and other ogans are 3,188 cases. So, the percentage of allocation criteria for mammographic unit = (1,617*100/(1,617+3,188) = 33.65 %

**** Capital cost was calculated by Capital cost at 1997 price devided by Expected year life and multiplied with % of allocation criteria.

***** Cost per unit of air conditioning is the market price at the year 1997

Table E.2 Capital Cost of the Mammographic Unit at NCI in FY 1998

Equipment items	Qualtity	Cost/unit (Baht)	Capital cost (Baht)	Installation year	Inflation rate*	Capital cost at 1998 price	Expected year life** (Year)	Allocation criteria***	Capital cost**** (Baht/Year)	Capital cost (Baht/month)
Building (rent)	60	6,000	360,000	1998	1.00	*360,000*	-	100	360,000.00	30,000.00
Mammography: Benette/contour	1	3,800,000	3,800,000	1995	1.15	*4,370,000*	10	100	437,000.00	36,416.67
Mammography: Benette/contour plus	-	-	-	-	-	-	-	-	-	-
Ultrasound	2	7,000,000	14,000,000	1995	1.15	*16,100,000*	10	40.33	649,380.12	54,115.01
Kodax Processor	1	700,000	700,000	1994	1.18	*826,000*	8	100	103,250.00	8,604.17
Computer set	1	500,000	500,000	1998	1	*500,000*	5	100	100,000.00	8,333.33
Air conditioning*****	6	285,000	1,710,000	NA	1	*1,710,000*	5	100	342,000.00	28,500.00
								Total	**1,991,630.12**	**165,969.18**

Note :

* Inflation rate calculated by the consumer price index for Bangkok and Vicinity of personal and medical care group at 1994 price (from: Trade and Economic Index Devision, Department of Internal Trade, Ministry of Commerce). In Table A5.4 shows how to calculate the inflarate at the year 1998 already.

** Expected year life of Mammography, ultrasound and Kodax Processor equipment come from the experts' opinion that use in this hospital. Others comes form Standardize for computerized equipment that can use only 5 years.

*** Allocation criteria of all equipment except Ultrasound is 100% for mammography screening. For Ultrasound, this equipment use for breasts are 2,414 cases and other ogans are 3,571 cases. So, the percentage of allocation criteria for mammographic unit = (2,414*100/(2,414+3,571) = 40.33 %

**** Capital cost was calculated by Capital cost at 1998 price devided by Expected year life and multiplied with % of allocation criteria.

***** Cost per unit of air conditioning is the market price at the year 1998

Table E.3 Capital Cost of the Mammographic Unit at NCI in FY 1999

Equipment items	Qualtity	Cost/unit (Baht)	Capital cost (Baht)	Installation year	Inflation rate*	Capital cost at 1999 price	Expected year life** (Year)	Allocation criteria***	Capital cost**** (Baht/Year)	Capital cost (Baht/month)
Building (rent)	60	6,000	360,000	1999	1.00	360,000	-	100	360,000.00	30,000.00
Mammography: Benette/contour	1	3,800,000	3,800,000	1995	1.18	4,484,000	10	100	448,400.00	37,366.67
Mammography: Benette/contour plu	1	4,500,000	4,500,000	1999	1	4,500,000	10	100	450,000.00	37,500.00
Ultrasound	2	7,000,000	14,000,000	1995	1.18	16,520,000	10	42.07	695,010.35	57,917.53
Kodax Processor	1	700,000	700,000	1994	1.22	854,000	8	100	106,750.00	8,895.83
Computer set	1	500,000	500,000	1998	1.03	515,000	5	100	103,000.00	8,583.33
Air conditioning*****	6	285,000	1,710,000	NA	1.03	1,761,300	5	100	352,260.00	29,355.00
								Total	**2,515,420.35**	**209,618.36**

Note :

* Inflation rate calculated by the consumer price index for Bangkok and Vicinity of personal and medical care group at 1994 price (from: Trade and Economic Index Devision, Department of Internal Trade, Ministry of Commerce). In Table A5.4 shows how to calculate the inflarate at the year 1999 already.

** Expected year life of Mammography, ultrasound and Kodax Processor equipment come from the experts' opinion that use in this hospital. Others comes form Standardize for computerized equipment that can use only 5 years.

*** Allocation criteria of all equipment except Ultrasound is 100% for mammography screening. For Ultrasound, this equipment use for breasts are 3,088 cases and other ogans are 4,252 cases. So, the percentage of allocation criteria for mammographic unit = (3,088*100/(3,088+4,252) = 42.07 %

**** Capital cost was calculated by Capital cost at 1999 price devided by Expected year life and multiplied with % of allocation criteria.

***** Cost per unit of air conditioning is the market price at the year 1999

Table E.4 Capital Cost of the Mammographic Unit at NCI in FY 1997-1999 at 1999 Price

Year	Total Capital cost (Bt.per year)	Total Capital cost (Bt.per month)	Inflation rate*	Total LC at 1999 price (Bt.per month)
1997	1,672,217.29	139,351.44	1.12	**156,073.61**
1998	1,991,630.12	165,969.18	1.03	**170,948.25**
1999	2,515,420.35	209,618.36	1	**209,618.36**

Table E.5 Inflation Rate of Consumer Price Index in 1997,1998, and 1999, A26

Year	CPI (1994=100)	CPI at 1997	Inflation rate
1994	100	108.7	1.09
1995	103	108.7	1.06
1996	105	108.7	1.04
1997	108.7	108.7	1.00
1998	118	108.7	0.92
1999	121.6	108.7	0.89

Year	CPI (1994=100)	CPI at 1998	Inflation rate
1994	100	118	1.18
1995	103	118	1.15
1996	105	118	1.12
1997	108.7	118	1.09
1998	118	118	1.00
1999	121.6	118	0.97

Year	CPI (1994=100)	CPI at 1999	Inflation rate
1994	100	121.6	1.22
1995	103	121.6	1.18
1996	105	121.6	1.16
1997	108.7	121.6	1.12
1998	118	121.6	1.03
1999	121.6	121.6	1.00

Source : Trade and Economic Index Devision, Department of Internal Trade,
Ministry of Commerce

Note: CPI = Consumer Price Index of Personal and Medical Care Group at for Bangkok and vicinity at the yer 1994 (1994=0)

APPENDIX F

Calculation of Total Cost and Average Cost

Table F.1 Total Cost of the Mammographic Unit at NCI in 1997-99 at 1999 price

Year	LC	MC	CC	*Total cost*
1997	721,909.68	629,868.41	1,872,883.36	***3,224,661.45***
1998	706,298.43	807,509.12	2,051,379.02	***3,565,186.57***
1999	750,408.30	853,536.24	2,515,420.35	***4,119,364.90***
Average	**726,205.47**	**763,637.92**	**2,146,560.91**	**3,636,404.31**

Table F.2 The Change of Total Cost of the Mammographic Unit at NCI in 1997-99 at 1999 price

Year	Delta LC	Delta MC	DeltaCC	*Delta Total cost*
1997				
1998	- 15,611	177,641	178,496	340,525
1999	44,110	46,027	464,041	554,178

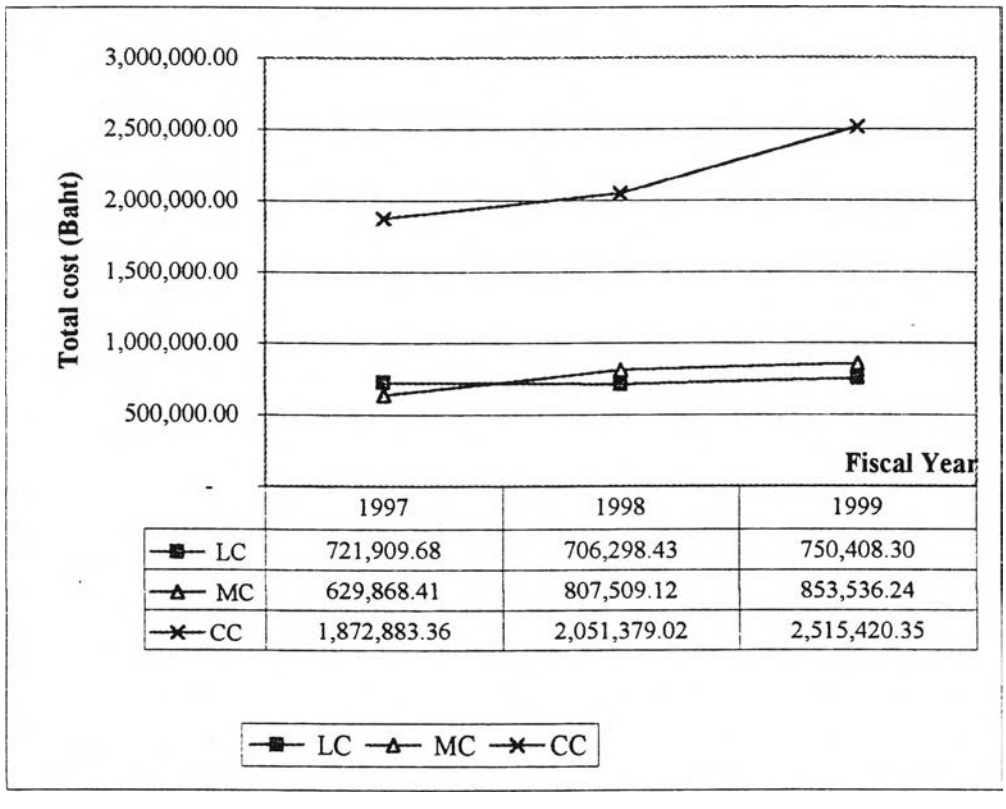


Table F.3 Total Cost and Average Cost of the Mammographic Unit at NCI in FY 1997

Month	No.of Pt.	Labour Cost	Material Cost	Capital Cost	Total cost	Average cost
January	54	60,159.14	43,380.77	156,073.61	*259,613.53*	*4,807.66*
February	39	60,159.14	41,945.38	156,073.61	*258,178.14*	*6,619.95*
March	153	60,159.14	55,641.41	156,073.61	*271,874.17*	*1,776.96*
April	166	60,159.14	55,342.37	156,073.61	*271,575.13*	*1,635.99*
May	115	60,159.14	50,916.58	156,073.61	*267,149.34*	*2,323.04*
June	67	60,159.14	46,849.64	156,073.61	*263,082.39*	*3,926.60*
July	81	60,159.14	45,982.42	156,073.61	*262,215.18*	*3,237.22*
August	191	60,159.14	58,332.77	156,073.61	*274,565.53*	*1,437.52*
September	206	60,159.14	59,199.99	156,073.61	*275,432.74*	*1,337.05*
October	209	60,159.14	59,678.45	156,073.61	*275,911.21*	*1,320.15*
November	177	60,159.14	57,824.41	156,073.61	*274,057.16*	*1,548.35*
December	159	60,159.14	54,774.20	156,073.61	*271,006.95*	*1,704.45*
Total	**1,617**	**721,909.68**	**629,868.41**	**1,872,883.36**	***3,224,661.45***	*31,674.93*
Average					***1,994.22***	*2,639.58*
Ratio		22.39	19.53	58.08	100.00	
		1.1	1.0	3.0	5.1	

Table F.4 Total Cost and Average Cost of Mammographic Unit at NCI in FY 1998

Month	No.of Pt.	Labour Cost	Material Cost	Capital Cost	Total cost	Average cost
January	205	58,858.20	66,041.13	170,948.25	*295,847.59*	*1,443.16*
February	166	58,858.20	58,670.86	170,948.25	*288,477.32*	*1,737.82*
March	200	58,858.20	67,443.68	170,948.25	*297,250.14*	*1,486.25*
April	168	58,858.20	65,188.60	170,948.25	*294,995.05*	*1,755.92*
May	164	58,858.20	63,951.06	170,948.25	*293,757.51*	*1,791.20*
June	234	58,858.20	71,816.34	170,948.25	*301,622.80*	*1,288.99*
July	190	58,858.20	67,581.19	170,948.25	*297,387.64*	*1,565.20*
August	252	58,858.20	71,348.82	170,948.25	*301,155.28*	*1,195.06*
September	250	58,858.20	73,218.89	170,948.25	*303,025.35*	*1,212.10*
October	208	58,858.20	69,286.25	170,948.25	*299,092.70*	*1,437.95*
November	158	58,858.20	64,418.57	170,948.25	*294,225.03*	*1,862.18*
December	219	58,858.20	68,543.72	170,948.25	*298,350.18*	*1,362.33*
Total	**2414**	**706,298.43**	**807,509.12**	**2,051,379.02**	***3,565,186.57***	***18,138.16***
Average					*1,476.88*	*1,511.51*
Ratio		19.81	22.65	57.54	100.00	
		1.0	1.1	2.9	5.0	

Table F.5 Total Cost and Average Cost of the Mammographic Unit at NCI in FY 1999

Month	No.of Pt.	Labour Cost	Material Cost	Capital Cost	Total cost	Average cost
January	210	62,534.03	66,849.35	209,618.36	*339,001.74*	*1,614.29*
February	204	62,534.03	66,261.95	209,618.36	*338,414.34*	*1,658.89*
March	271	62,534.03	72,669.95	209,618.36	*344,822.34*	*1,272.41*
April	251	62,534.03	73,844.75	209,618.36	*345,997.14*	*1,378.47*
May	229	62,534.03	70,186.85	209,618.36	*342,339.24*	*1,494.93*
June	291	62,534.03	74,432.15	209,618.36	*346,584.54*	*1,191.01*
July	276	62,534.03	74,298.65	209,618.36	*346,451.04*	*1,255.26*
August	343	62,534.03	80,252.75	209,618.36	*352,405.14*	*1,027.42*
September	291	62,534.03	74,004.95	209,618.36	*346,157.34*	*1,189.54*
October	235	62,534.03	62,470.55	209,618.36	*334,622.94*	*1,423.93*
November	232	62,534.03	67,329.95	209,618.36	*339,482.34*	*1,463.29*
December	255	62,534.03	70,934.45	209,618.36	*343,086.84*	*1,345.44*
Total	**3,088**	**750,408.36**	**853,536.24**	**2,515,420.35**	**4,119,364.96**	***16,314.89***
					1,333.99	***1,359.57***
Ratio		18.2	20.7	61.1	100.0	
		1.0	1.1	3.2	5.3	

Table F.6 Average Cost of the Mammographic Unit at NCI in FY 1997-1999 (36 months)

No.	Month	No.Pt.	Labour Cost	Material Cost	Capital Cost	Total cost	Average cost
1	January	**54**	60,159.14	43,380.77	156,073.61	*259,613.53*	*4,807.66*
2	February	**39**	60,159.14	41,945.38	156,073.61	*258,178.14*	*6,619.95*
3	March	**153**	60,159.14	55,641.41	156,073.61	*271,874.17*	*1,776.96*
4	April	**166**	60,159.14	55,342.37	156,073.61	*271,575.13*	*1,635.99*
5	May	**115**	60,159.14	50,916.58	156,073.61	*267,149.34*	*2,323.04*
6	June	**67**	60,159.14	46,849.64	156,073.61	*263,082.39*	*3,926.60*
7	July	**81**	60,159.14	45,982.42	156,073.61	*262,215.18*	*3,237.22*
8	August	**191**	60,159.14	58,332.77	156,073.61	*274,565.53*	*1,437.52*
9	September	**206**	60,159.14	59,199.99	156,073.61	*275,432.74*	*1,337.05*
10	October	**209**	60,159.14	59,678.45	156,073.61	*275,911.21*	*1,320.15*
11	November	**177**	60,159.14	57,824.41	156,073.61	*274,057.16*	*1,548.35*
12	December	**159**	60,159.14	54,774.20	156,073.61	*271,006.95*	*1,704.45*
13	January	**205**	58,858.20	66,041.13	170,948.25	*295,847.59*	*1,443.16*
14	February	**166**	58,858.20	58,670.86	170,948.25	*288,477.32*	*1,737.82*
15	March	**200**	58,858.20	67,443.68	170,948.25	*297,250.14*	*1,486.25*
16	April	**168**	58,858.20	65,188.60	170,948.25	*294,995.05*	*1,755.92*
17	May	**164**	58,858.20	63,951.06	170,948.25	*293,757.51*	*1,791.20*
18	June	**234**	58,858.20	71,816.34	170,948.25	*301,622.80*	*1,288.99*
19	July	**190**	58,858.20	67,581.19	170,948.25	*297,387.64*	*1,565.20*
20	August	**252**	58,858.20	71,348.82	170,948.25	*301,155.28*	*1,195.06*
21	September	**250**	58,858.20	73,218.89	170,948.25	*303,025.35*	*1,212.10*
22	October	**208**	58,858.20	69,286.25	170,948.25	*299,092.70*	*1,437.95*
23	November	**158**	58,858.20	64,418.57	170,948.25	*294,225.03*	*1,862.18*
24	December	**219**	58,858.20	68,543.72	170,948.25	*298,350.18*	*1,362.33*
25	January	**210**	62,534.03	66,849.35	209,618.36	*339,001.73*	*1,614.29*
26	February	**204**	62,534.03	66,261.95	209,618.36	*338,414.33*	*1,658.89*
27	March	**271**	62,534.03	72,669.95	209,618.36	*344,822.33*	*1,272.41*
28	April	**251**	62,534.03	73,844.75	209,618.36	*345,997.13*	*1,378.47*
29	May	**229**	62,534.03	70,186.85	209,618.36	*342,339.23*	*1,494.93*
30	June	**291**	62,534.03	74,432.15	209,618.36	*346,584.53*	*1,191.01*
31	July	**276**	62,534.03	74,298.65	209,618.36	*346,451.03*	*1,255.26*
32	August	**343**	62,534.03	80,252.75	209,618.36	*352,405.13*	*1,027.42*
33	September	**291**	62,534.03	74,004.95	209,618.36	*346,157.33*	*1,189.54*
34	October	**235**	62,534.03	62,470.55	209,618.36	*334,622.93*	*1,423.93*
35	November	**232**	62,534.03	67,329.95	209,618.36	*339,482.33*	*1,463.29*
36	December	**255**	62,534.03	70,934.45	209,618.36	*343,086.83*	*1,345.44*
	Total	**7119**				**10,909,212.92**	***66,127.98***
	Average cost during 36 months					**1,532.41**	***1,836.89***

Table F.7 Monthly Average cost comparing in 3 fiscal years (1997-1999)

Month	Monthly Average cost in fiscal year (Baht)		
	1997	1998	1999
January	*4,807.66*	*1,443.16*	*1,614.29*
February	*6,619.95*	*1,737.82*	*1,658.89*
March	*1,776.96*	*1,486.25*	*1,272.41*
April	*1,635.99*	*1,755.92*	*1,378.47*
May	*2,323.04*	*1,791.20*	*1,494.93*
June	*3,926.60*	*1,288.99*	*1,191.01*
July	*3,237.22*	*1,565.20*	*1,255.26*
August	*1,437.52*	*1,195.06*	*1,027.42*
September	*1,337.05*	*1,212.10*	*1,189.54*
October	*1,320.15*	*1,437.95*	*1,423.93*
November	*1,548.35*	*1,862.18*	*1,463.29*
December	*1,704.45*	*1,362.33*	*1,345.44*
Average cost at that period	*2,639.58*	*1,511.51*	***1,359.57***
Average cost at that fiscal year	***1,994.22***	*1,476.88*	1,333.99

Note:
Average cost at that period = Sum of Average cost 12 months each year / 12
Average cost at that fiscal year = Sum of Real Total cost 12 months each year / No. of patients

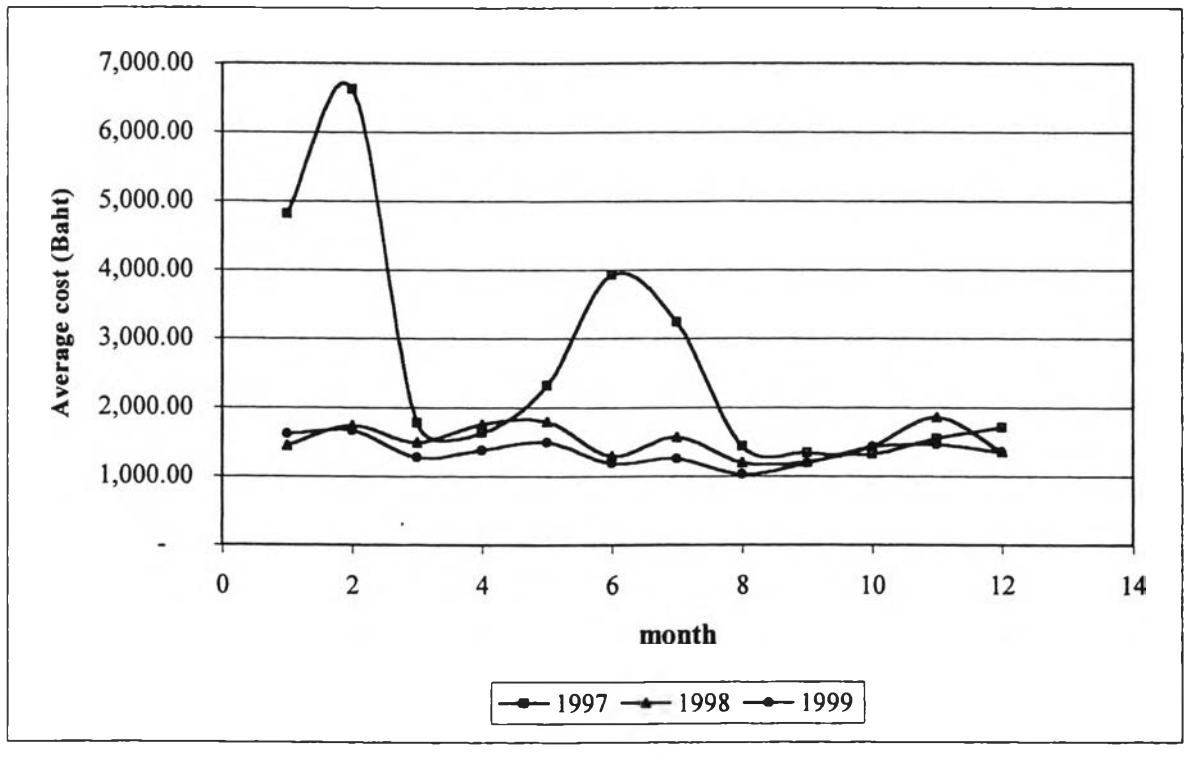


Table F.8 Average Cost of the Mammographic Screening at NCI in during FY 1997-1999 by Assending the Amount of Average Cost

No.	Month	No.Pt.	Real Total cost	Average cost
2	February	**39**	*258,178.14*	*6,619.95*
1	January	**54**	*259,613.53*	*4,807.66*
6	June	**67**	*263,082.39*	*3,926.60*
7	July	**81**	*262,215.18*	*3,237.22*
5	May	**115**	*267,149.34*	*2,323.04*
23	November	**158**	*294,225.03*	*1,862.18*
17	May	**164**	*293,757.51*	*1,791.20*
3	March	**153**	*271,874.17*	*1,776.96*
16	April	**168**	*294,995.05*	*1,755.92*
14	February	**166**	*288,477.32*	*1,737.82*
12	December	**159**	*271,006.95*	*1,704.45*
26	February	**204**	*339,001.73*	*1,661.77*
4	April	**166**	*271,575.13*	*1,635.99*
19	July	**190**	*297,387.64*	*1,565.20*
11	November	**177**	*274,057.16*	*1,548.35*
15	March	**200**	*297,250.14*	*1,486.25*
13	January	**205**	*295,847.59*	*1,443.16*
22	October	**208**	*299,092.70*	*1,437.95*
8	August	**191**	*274,565.53*	*1,437.52*
24	December	**219**	*298,350.18*	*1,362.33*
9	September	**206**	*275,432.74*	*1,337.05*
10	October	**209**	*275,911.21*	*1,320.15*
18	June	**234**	*301,622.80*	*1,288.99*
29	May	**229**	*286,402.97*	*1,250.67*
27	March	**271**	*338,414.33*	*1,248.76*
21	September	**250**	*303,025.35*	*1,212.10*
20	August	**252**	*301,155.28*	*1,195.06*
25	January	**210**	*242,744.79*	*1,155.93*
28	April	**251**	*280,075.07*	*1,115.84*
31	July	**276**	*285,655.37*	*1,034.98*
34	October	**235**	*234,894.99*	*999.55*
35	November	**232**	*231,797.79*	*999.13*
30	June	**291**	*285,201.47*	*980.07*
36	December	**255**	*230,516.19*	*903.99*
33	September	**291**	*234,120.69*	*804.54*
32	August	**343**	*238,526.19*	*695.41*

APPENDIX G

Calculation of Operating Cost

Calculation of Operating cost

Table G.1 Operating Cost of the Mammographic Unit at NCI in FY 1997 at 1999 Price

Month	Labour Cost	Material Cost	Operating Cost
January	60,159.14	43,380.77	*103,539.91*
February	60,159.14	41,945.38	*102,104.52*
March	60,159.14	55,641.41	*115,800.55*
April	60,159.14	55,342.37	*115,501.51*
May	60,159.14	50,916.58	*111,075.72*
June	60,159.14	46,849.64	*107,008.78*
July	60,159.14	45,982.42	*106,141.56*
August	60,159.14	58,332.77	*118,491.91*
September	60,159.14	59,199.99	*119,359.13*
October	60,159.14	59,678.45	*119,837.59*
November	60,159.14	57,824.41	*117,983.55*
December	60,159.14	54,774.20	*114,933.34*
Total	**721,909.68**	**629,868.41**	**1,351,778.09**

Table G.2 Operating Cost of the Mammographic Unit at NCI in FY 1998 at 1999 Price

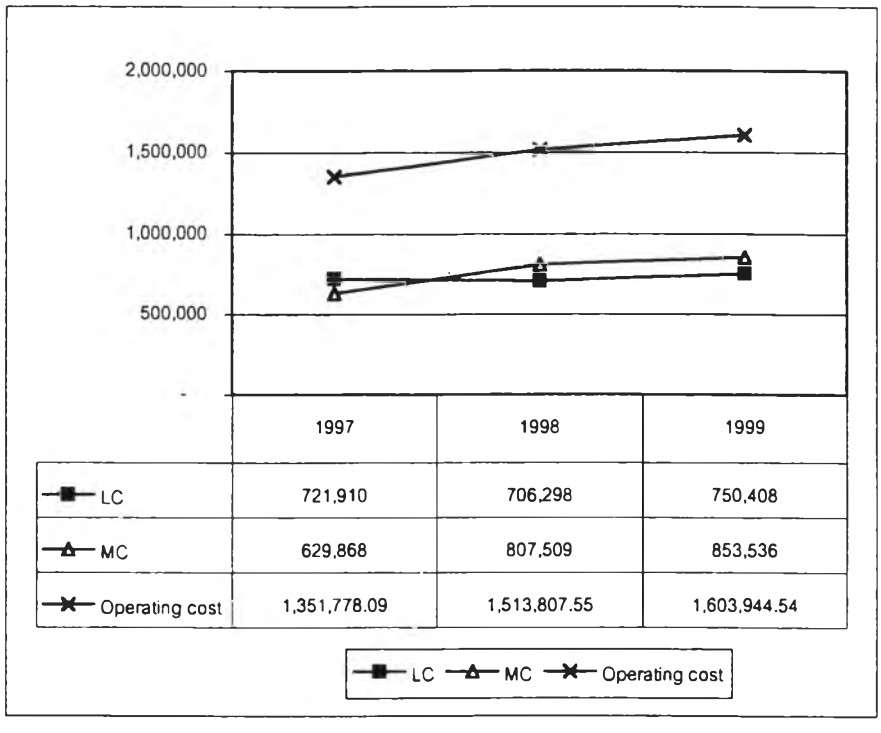
Month	Labour Cost	Material Cost	Operating Cost
January	58,858.20	66,041.13	*124,899.33*
February	58,858.20	58,670.86	*117,529.07*
March	58,858.20	67,443.68	*126,301.88*
April	58,858.20	65,188.60	*124,046.80*
May	58,858.20	63,951.06	*122,809.26*
June	58,858.20	71,816.34	*130,674.54*
July	58,858.20	67,581.19	*126,439.39*
August	58,858.20	71,348.82	*130,207.03*
September	58,858.20	73,218.89	*132,077.09*
October	58,858.20	69,286.25	*128,144.45*
November	58,858.20	64,418.57	*123,276.77*
December	58,858.20	68,543.72	*127,401.92*
Total	**706,298.43**	**807,509.12**	***1,513,807.55***

Table G.3 Operating Cost of the Mammographic Unit at NCI in FY 1999 at 1999 Price

Month	Real Labour Cost	Real Material Cost	Real Operating Cost
January	62,534.03	66,849.35	*129,383.37*
February	62,534.03	66,261.95	*128,795.97*
March	62,534.03	72,669.95	*135,203.97*
April	62,534.03	73,844.75	*136,378.77*
May	62,534.03	70,186.85	*132,720.87*
June	62,534.03	74,432.15	*136,966.17*
July	62,534.03	74,298.65	*136,832.67*
August	62,534.03	80,252.75	*142,786.77*
September	62,534.03	74,004.95	*136,538.97*
October	62,534.03	62,470.55	*125,004.57*
November	62,534.03	67,329.95	*129,863.97*
December	62,534.03	70,934.45	*133,468.47*
Total	**750,408.30**	**853,536.24**	***1,603,944.54***

Table G.4 Operating Cost and their change of the Mammographic Unit in FY 1997-1999

Year	LC	MC	Operating cost	d LC	d MC	d OC
1997	721,910	629,868	1,351,778.09			
1998	706,298	807,509	1,513,807.55	- 15,611.25	177,640.71	162,029.46
1999	750,408	853,536	1,603,944.54	44,109.88	46,027.12	90,137.00
Average	**726,205**	**763,638**	**1,489,843**			



APPENDIX H

Calculation of Marginal Cost

Table H.1 Marginal Cost of the Mammographic Unit during FY 1997-1999

Year	No. of Pt.	Total cost	Delta Pt.	Delta TC	Marginal cost
1997	1617	*3,224,661*			
1998	2414	*3,565,187*	797	340,525.11	427.26
1999	3088	*4,119,365*	674	554,178.33	822.22
	Total	***10,909,213***		**Average Marginal cost**	**624.74**

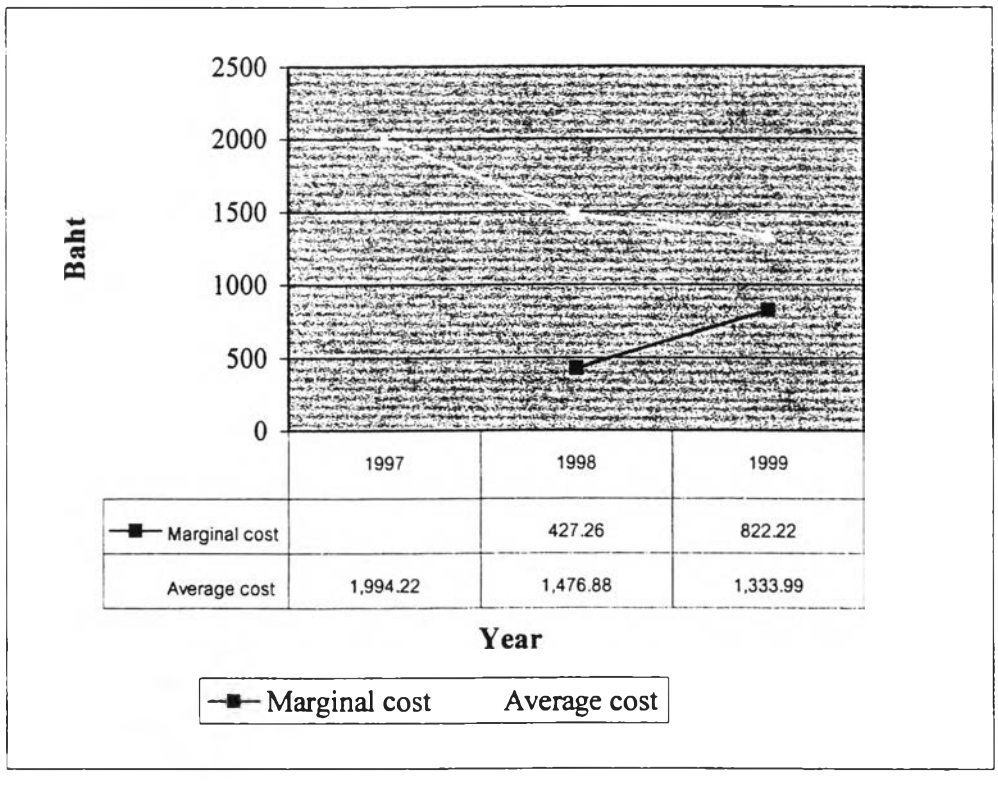


Table H.2 Monthly Marginal Cost of Mammography Screening at NCI in 1997-1999

No.	Month	No.Pt.	Real Total cost	Delta Pt.(Q)	Delta TC	Marginal cost	Average cost
2	February	39	*258,178.14*				6,619.95
1	January	54	*259,613.53*	15	*1,435.39*	95.69	4,807.66
6	June	67	*263,082.39*	13	*3,468.86*	266.84	3,926.60
7	July	81	*262,215.18*	14	- *867.22*	- 61.94	3,237.22
5	May	115	*267,149.34*	34	*4,934.16*	145.12	2,323.04
3	March	153	*271,874.17*	38	*4,724.83*	124.34	1,776.96
23	November	158	*294,225.03*	5	*22,350.86*	4,470.17	1,862.18
12	December	159	*271,006.95*	1	- *23,218.07*	- 23,218.07	1,704.45
17	May	164	*293,757.51*	5	*22,750.56*	4,550.11	1,791.20
4	April	166	*271,575.13*	2	- *22,182.38*	- 11,091.19	1,635.99
14	February	166	*288,477.32*	0	*16,902.19*	-	1,737.82
16	April	168	*294,995.05*	2	*6,517.74*	3,258.87	1,755.92
11	November	177	*274,057.16*	9	- *20,937.89*	- 2,326.43	1,548.35
19	July	190	*297,387.64*	13	*23,330.48*	1,794.65	1,565.20
8	August	191	*274,565.53*	1	- *22,822.11*	- 22,822.11	1,437.52
15	March	200	*297,250.14*	9	*22,684.61*	2,520.51	1,486.25
26	February	204	*338,414.33*	4	*41,164.20*	10,291.05	1,658.89
13	January	205	*295,847.59*	1	- *42,566.75*	- 42,566.75	1,443.16
9	September	206	*275,432.74*	1	- *20,414.84*	- 20,414.84	1,337.05
22	October	208	*299,092.70*	2	*23,659.96*	11,829.98	1,437.95
10	October	209	*275,911.21*	1	- *23,181.50*	- 23,181.50	1,320.15
25	January	210	*339,001.73*	1	*63,090.53*	63,090.53	1,614.29
24	December	219	*298,350.18*	9	- *40,651.56*	- 4,516.84	1,362.33
29	May	229	*342,339.23*	10	*43,989.06*	4,398.91	1,494.93
35	November	232	*339,482.33*	3	- *2,856.90*	- 952.30	1,463.29
18	June	234	*301,622.80*	2	- *37,859.54*	- 18,929.77	1,288.99
34	October	235	*334,622.93*	1	*33,000.14*	33,000.14	1,423.93
21	September	250	*303,025.35*	15	- *31,597.59*	- 2,106.51	1,212.10
28	April	251	*345,997.13*	1	*42,971.79*	42,971.79	1,378.47
20	August	252	*301,155.28*	1	- *44,841.86*	- 44,841.86	1,195.06
36	December	255	*343,086.83*	3	*41,931.56*	13,977.19	1,345.44
27	March	271	*344,822.33*	16	*1,735.50*	108.47	1,272.41
31	July	276	*346,451.03*	5	*1,628.70*	325.74	1,255.26
30	June	291	*346,584.53*	15	*133.50*	8.90	1,191.01
33	September	291	*346,157.33*	0	- *427.20*	-	1,189.54
32	August	343	*352,405.13*	52	*6,247.80*	120.15	1,027.42
	Total	7,119	**10,909,212.92**	*304.00*	*94,227.00*		66,127.98
Average Pt./mont		198	**1,532.41**	*Average MC*	***309.96***		**1,836.89**

Table H.3 A Simple Four-month Moving average marginal cost of Mammographic unit at NCI in fiscal year 1997-19

No.	Month	No.Pt.	Real Total cost	Mov.Aver.Pt.	Moving TC	Delta Pt.(Q)	Delta TC	Mov. Marg. cost	Mov.Aver.cos
2	February	39	*258,178.14*						
1	January	54	*259,613.53*						
6	June	67	*263,082.39*						
7	July	81	*262,215.18*	60.25	53,713.52				891.51
5	May	115	*267,149.34*	79.25	53,713.52	19.00	-	-	677.77
3	March	153	*271,874.17*	104.00	53,713.52	24.75	-	-	516.48
23	Novembe	158	*294,225.03*	126.75	54,571.11	22.75	*857.59*	37.70	430.54
12	Decembe	159	*271,006.95*	146.25	54,571.11	19.50	-	-	373.14
17	May	164	*293,757.51*	158.50	55,428.70	12.25	*857.59*	70.01	349.71
4	April	166	*271,575.13*	161.75	55,428.70	3.25	-	-	342.68
14	February	166	*288,477.32*	163.75	55,428.70	2.00	-	-	338.50
16	April	168	*294,995.05*	166.00	56,286.29	2.25	*857.59*	381.15	339.07
11	Novembe	177	*274,057.16*	169.25	55,428.70	3.25	- *857.59*	- 263.87	327.50
19	July	190	*297,387.64*	175.25	56,286.29	6.00	*857.59*	142.93	321.18
8	August	191	*274,565.53*	181.50	55,428.70	6.25	- *857.59*	- 137.21	305.39
15	March	200	*297,250.14*	189.50	55,428.70	8.00	-	-	292.50
26	February	204	*338,414.33*	196.25	57,633.83	6.75	*2,205.13*	326.69	293.68
13	January	205	*295,847.59*	200.00	57,633.83	3.75	-	-	288.17
9	Septembe	206	*275,432.74*	203.75	57,633.83	3.75	-	-	282.87
22	October	208	*299,092.70*	205.75	57,633.83	2.00	-	-	280.12
10	October	209	*275,911.21*	207.00	55,428.70	1.25	- *2,205.13*	- 1,764.10	267.77
25	January	210	*339,001.73*	208.25	56,776.24	1.25	*1,347.53*	1,078.03	272.63
24	Decembe	219	*298,350.18*	211.50	57,633.83	3.25	*857.59*	263.87	272.50
29	May	229	*342,339.23*	216.75	58,981.36	5.25	*1,347.53*	256.67	272.12
35	Novembe	232	*339,482.33*	222.50	61,186.49	5.75	*2,205.13*	383.50	275.00
18	June	234	*301,622.80*	228.50	59,838.96	6.00	- *1,347.53*	- 224.59	261.88
34	October	235	*334,622.93*	232.50	61,186.49	4.00	*1,347.53*	336.88	263.17
21	Septembe	250	*303,025.35*	237.75	59,838.96	5.25	- *1,347.53*	- 256.67	251.69
28	April	251	*345,997.13*	242.50	59,838.96	4.75	-	-	246.76
20	August	252	*301,155.28*	247.00	59,838.96	4.50	-	-	242.26
36	Decembe	255	*343,086.83*	252.00	59,838.96	5.00	-	-	237.46
27	March	271	*344,822.33*	257.25	61,186.49	5.25	*1,347.53*	256.67	237.85
31	July	276	*346,451.03*	263.50	61,186.49	6.25	-	-	232.21
30	June	291	*346,584.53*	273.25	62,534.03	9.75	*1,347.53*	138.21	228.85
33	Septembe	291	*346,157.33*	282.25	62,534.03	9.00	-	-	221.56
32	August	343	*352,405.13*	300.25	62,534.03	18.00	-	-	208.27

APPENDIX I

Calculation of Calculation of Cost Recovery

Table I.1 Cost recovery when compare with the total cost

Year	No. of patient	Total cost	Total revenue	Cost recovery ratio
1997	1,617	3,224,661	1,811,040	***0.56***
1998	2,414	3,565,187	2,486,420	***0.70***
1999	3,088	4,119,365	3,088,000	***0.75***
Average	2,373	**3,636,404**	**2,461,820**	**0.68**

Table I.2 Cost recovery when compare with the operating cost

Year	No. of patient	Operating cost	Total revenue	Cost recovery ratio
1997	1,617	1,351,778.09	1,811,040	***1.34***
1998	2,414	1,513,807.55	2,486,420	***1.64***
1999	3,088	1,603,944.54	3,088,000	***1.93***
Average	2,373	**1,489,843.39**	**2,461,820**	**1.65**

APPENDIX J

Calculation of Break Even Point

Table J.1 Number of patients at Break Even Point in fiscal year 1997-1999

Year	No.of Pt	Fix cost	Variable cost	*VC/case*	Rev./case	Rev/case-VC/cas	N at BEA	Pt./day
1997	1,617	1,872,883	##########	*746.41*	1,120	374	**5,013**	23
1998	2,414	2,051,379	##########	*608.83*	1,030	421	**4,871**	22
1999	3,088	2,515,420	##########	*519.41*	1,000	481	**5,234**	24
Average	2,373	***2,146,561***	##########	**625**	**1,050**	**425**	**5,039**	**23**

Break event analysis is calculated by

Total Revenue	=	Total cost
Revenue per case	=	Fixed cost + Variable cost
	=	Fixed cost + Variable cost per case x N
N	=	Fixed cost / (revenue per case-variable cost per case)

where Fixed cost is capital cost , and variable cost is labour cost and material cost and revenue per case is a charge for mammogram test

Patient/day is calculated by the number of patient at BEP devided by 220 days/year

APPENDIX K

Policy Implication to National Policy of Mammography Screening

Table K.1 Calculation Budget for Mammography Screening in Various Conditions

Women aged group (year)	Whole Kingdom* :1999 (unit:1000)	annual screening (Thousand Baht)	2-year period (Thousand Baht)	3-year period (Thousand Baht)	50% of women by annually (Thousand Baht)
40-49	3,921	1,831,107	915,554	610,369	915,554
50-59	2,471	1,153,957	576,979	384,652	576,979
60-69	1,652	771,484	385,742	257,161	385,742
>70	878	410,026	205,013	136,675	205,013
Total	8,922	4,166,574	2,083,287	1,388,858	2,083,287

CURRICULUM VITAE

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Email Address: teng@health.moph.go.th

Nationality: Thai

Place of Birth: Khon Kaen

Marital Status: Married

Education Background:

Degree	*Institution*	*Major*	*Year*
- B.Sc.	Khon Kaen University	Public Health	1981-1985
- M.Sc.	Mahidol University	Public Health	1989-1992

Past Experience:

1. Sanitary Technician, Huayplue Community Hospital, Nakhon Pathom Provincial Health Office, Ministry of Public Health,Thailand.(1985-1986)
2. Training Officer, Sirindhorn College of Public Health, Khon Kaen, Ministry of Public Health, Thailand. (1986-1992)
3. Human Resource Development Officer, Bureau of Health Policy and Planning, Ministry of Public Health, Thailand. (1992-Up to now)

Publications: (Year of publications in-groups)

1. Cost Analysis for Production of Paramedical Personnel: A case study for Financial Policy Development (1995).
2. The Ministry of Public Health Cost of Nursing Production in Fiscal Year 1990-1992 (1993).
3. The use of Extra Corporeal Shock Wave Lithotripters in Thailand: Efficient and Equity (1994).
4. Pattern of Public Sector Health Expenditure during the 5-6-7 Health Development Plan (1998)
5. Work force Situation in Community Hospital in 1998 (1999).
6. Update figures on diffusion of CT, ESWL, and Mammography. (1999)