CHAPTER 5

RESULTS

This chapter provides the results as well as discussions. (see appendix C for details) The results follow the conceptual framework of the study and there are presented in four parts. 1) Hospital cost 2) Simultaneous allocation VS. Step down allocation 3) Hospital revenue 4)Hospital cost recovery 5) Break even analysis

5.1 Hospital cost

5.1.1 Capital cost

Total capital cost of Nakornthon Hospital in 2000, was 52,164,310.65 baht. The components of capital costs were 68.69 % from equipment, 24.68 % from buildings, and 6.63 % from maintenance.(see capital cost sheet in appendix C)

Table 5.1 Capital cost of Nakornthon Hospital in year 2000

Name of cost	Equipment cost	Building cost	Maintenance cost	Total capital cost
Value (baht)	35,801,813.65	12,874,315.00	3,442,959.	52,164,311
Percentage	68.69	24.68	6.63	100.00

Administration (A01) was the cost center with the highest capital cost (19,264,359 baht or 47.61%) Most of A01 capital cost were from equipment cost and building cost (58% and 41% of total equipment and building cost). (See table 5.4) Because it provided infrastructure of the hospital such as electricity, water supply, sewage treatment, personnel's residence, and other recreation supports.

5.1.2 Labor cost

Total labor cost of Nakornthon Hospital in 2000 was 92,633,974.23 baht. The components of labor costs were 88,628,548.23 baht (95.68%) from salary and wage 4,005,426 baht (4.32%) from fringe benefit . (see labor cost sheet in appendix C)

Table 5.2 Labor Cost of Nakornthon Hospital in 2000.

Name of cost	Salary and Wage	Fringe Bonus	Total Labor Cost
Value (baht)	88,628,548.23	4,005,426	92,633,974.23
Percentage	95.68	4.32	100

OPD Emergency and porter was the highest labor cost for direct-service department due to it provided the highest workload of patient services and works for 24 hours a day. OPD service was the second high labor cost .

5.1.3 Material cost

Total material cost of Nakornthon Hospital in 2000 was 75,754,233.23 baht. The components of material cost were office and medical supply (84.785%) which including medical, medical device. The second high material cost was electricity expenses which in other expenses. (see material cost sheet in appendix C)

Table 5.3 Material cost of Nakornthon Hospital in 2000

Name of cost	Office and Medical supply	Others	Total Material Cost
Value (baht)	64,224,801.00	11,529,432.23	75,754,233.23
Percentage	84.78	15.22	100

5.1.4 Total hospital cost

The cost of Nakornthon Hospital in 2000 was 220,552,518.11 baht. The components of total costs were 23.65% for capital cost, 42% for labor cost, and 34.35% for material cost. Pharmacy (B04) was the cost center with the highest total cost (49,925,670.84 baht or 22.64%) (See table 5.4)

Table 5.4 Total Hospital Cost of Nakornthon Hospital in 2000.

Cost center	Material cost	Labor cost	Capital cost	Total direct cost	Percentage	MC:LC:CC
A01	6,603,209.14	14,597,678.90	19,264,358.90	40,465,246.94	18.35	16.32:36.07:47.61
A02	94,793.72	267,283.99	46,904.33	408,982.04	0.19	23.18:65.35:11.47
A03	1,286,415.97	1,443,767.94	150,093.86	2,880,277.77	1.31	44.66:50.13:05.21
A04	271,159.28	413,238.77	373,791.43	1,058,189.48	0.48	25.62:39.05:35.32
A05	6,991,092.32	7,325,700.19	2,126,912.45	16,443,704.96	7.46	42.52:44.55:12.93
A06	391,042.12	453,998.23	624,430.86	1,469,471.21	0.67	26.61:30.90:42.49
A07	1,344,838.65	1,487,582.03	137,205.78	2,969,626.46	1.35	45.29:50.09:04.62
A08	531,864.91	602,672.74	120,508.05	1,255,045.70	0.57	42.38:48.02:09.60
A09	1,544,278.36	1,605,639.44	422,405.19	3,572,322.99	1.62	43.25:44.95:11.82
A10	1,065,618.17	1,349,605.03	909,222.39	3,324,445.59	1.51	32.05:40.60:27.35
B01	4,547,756.37	4,825,626.26	964,659.39	10,338,042.02	4.69	43.99:46.68:09.33
B02	3,263,521.06	3,452,729.86	5,361,111.47	12,077,362.39	5.48	27.02:28.59:44.39
B03	157,119.58	313,035.10	683,081.60	1,153,236.28	0.52	13.62:27.14:59.23
B04	24,503,498.32	25,280,016.31	142,156.21	49,925,670.84	22.64	49.08:50.64:00.28
B05	3,310,344.98	4,195,260.64	3,509,192.51	11,014,798.13	4.99	30.05:38.09:31.86
B06	4,414,285.61	4,684,751.69	805,311.26	9,904,348.56	4.49	44.57:47.30:08.13
B07	153,077.98	532,048.95	457,453.20	1,142,580.13	0.52	13.40:46.57:40.04
B08	216,494.48	542,689.87	1,295,744.01	2,054,928.36	0.93	10.54:26.41:63.06
B09	358,457.35	518,047.14	751,057.10	1,627,561.59	0.74	22.02:31.83:46.15
C01	1,217,668.92	1,731,315.39	1,904,796.88	4,853,781.19	2.20	25.09:35.67:39.24
C02	861,606.51	921,943.75	334,369.93	2,117,920.19	0.96	40.68:43.53:15.79
C03	1,275,108.26	1,923,450.51	763,927.72	3,962,486.49	1.80	32.18:48.54:19.28
C04	1,669,962.60	2,595,116.64	3,402,891.35	7,667,970.59	3.48	21.78:33.84:44.38
C05	1,663,423.46	2,277,406.05	2,865,441.75	6,806,271.26	3.09	24.44:33.46:42.10
C06	2,001,282.63	2,555,419.22	2,676,762.70	7,233,464.55	3.28	27.67:35.33:37.01
C07	3,714,394.72	4,239,908.81	1,921,842.89	9,876,146.42	4.48	37.61:42.93:19.46
D01	1,212,386.06	1,367,411.54	132,080.52	2,711,878.12	1.23	44.71:50.42:04.87
D02	1,089,531.70	1,130,629.24	16,596.91	2,236,757.85	1.01	48.71:50.55:00.74
	75,754,233.23	**92,633,974.23**	**52,164,310.65**	**220,552,518.11**	**100**	
	34.35	**42.00**	**23.65**	**100.00**		

Table 5.5 Direct and indirect cost of each cost center

Code	Department	Direct cost	%	Indirect cost	%	Full cost	%
C01	OPD Service	4,853,781.19	5.3	87,055,699.02	94.7	91,909,480.21	43.2
C02	OPD Dental	2,117,920.19	38.2	3,423,326.31	61.8	5,541,246.50	2.6
C03	OPD Emergency + porter	3,962,486.49	12.7	27,230,232.52	87.3	31,192,719.01	14.7
C04	IPD Ward 5	7,667,970.59	25.1	22,847,315.25	74.9	30,515,285.84	14.4
C05	IPD Ward 6	6,806,271.26	27.7	17,802,217.64	72.3	24,608,488.90	11.6
C06	IPD Ward 7	7,233,464.55	49.5	7,394,207.93	50.5	14,627,672.48	6.9
C07	ICU + hemodialysis service	9,876,146.42	69.5	4,340,593.55	30.5	14,216,739.97	6.7
	Total	42,518,040.69	20	170,093,592.22	80	212,611,632.91	100

From table 5.5 show the proportion of direct cost and indirect cost of patient service (PS) cost centers the out-patient department was the highest percentage of total patient service cost center due to the most number of patient visiting. (see appendix C)

5.1.5 Total costs of patient service cost centers

Total costs of PS compose of direct and indirect cost, which were allocated from NRPCC and RPCC by simultaneous allocation method. (see appendix C)

Table 5.6 Total Cost of patient service cost center

(Simultaneous method)

	C1	C2	C3	C4	C5	C6	C7	Total
Total cost	91,909,480	5,541,246	31,192,719	30,515,285	24,608,488	14,627,672	14,216,739	212,611,629
No. of case	119,239	4,535	35,630	2,534	3,085	667	282	165,972
Unit cost per case	771	1,222	875	12,042	7,977	21,931	50,414	-
Unit cost per day	-	-	-	3,325	2,411	4,980	11,265	-

Total costs of patient service cost centers

Total costs of PS compose of direct and indirect cost, which were allocated from NRPCC and RPCC by step-down allocation method.

Table 5.6.1 Total Cost of patient service cost center

(step – down)

	C1	C2	C3	C4	C5	C6	C7	Total
Total cost	92,163,456	5,715,084	30,746,544	30,483,382	24,294,005	14,685,932	14,025,268	212,113,671
No. of case	119,239	4,535	35,630	2,534	3,085	667	282	165,972
Unit cost per case	773	1,260	863	12,032	7,875	22,018	49,735	-
Unit cost per day	-	-	-	3,322	2,380	5,000	11,114	-

5.1.6 Unit cost of patient service cost centers for SSS In-Patient (simultaneous method)

Table 5.7 Unit Cost of patient service cost centers for SSS In-Patient

(Simultaneous method)

	C4	C5	C6	C7
Total cost	6,972,514	7,370,581	6,074,761	4,990,983
Length of stay	1,765	3,137	1,259	202
Unit cost per day	3,950	2,350	4,825	24,708

Unit cost of patient service cost centers for SSS In-Patient (step – down)

Table 5.7.1 Unit Cost of patient service cost centers for SSS In-Patient

(step - down)

	C4	C5	C6	C7
Total cost	6,965,224	7,276,389	6,098,955	4,923,764
Length of stay	1,765	3,137	1,259	202
Unit cost per day	3,946	2,320	4,844	24,375

5.1.7 Unit cost of patient service cost centers for A 09 SSS In-Patient (simultaneous method)

Table 5.8 Unit Cost of patient service cost centers for A 09 SSS In-Patient (Simultaneous method)

	C4	C5	C6
Total cost	746,625	231,328	21,931
Length of stay	127	76	2
Unit cost per day	5,879	3,044	10,965

Unit cost of patient service cost centers for A 09 SSS In-Patient (step – down)

Table 5.8.1 Unit cost of patient service cost centers for A 09 SSS In-Patient (step – down)

	C4	C5	C6
Total cost	754,844	228,372	22,018
Length of stay	127	76	2
Unit cost per day	5,873	3,005	11,009

5.1.8 Unit cost of patient service cost centers for A 039 SSS In-Patient (simultaneous method)

Table 5.9 Unit cost of patient service cost centers for A 039 SSS In-Patient (simultaneous method)

	C4	C5
Total cost	180,635	2,395
Length of stay	34	8
Unit cost per day	5,313	2,991

Unit cost of patient service cost centers for A 039 SSS In-Patient (step – down)

Table 5.9.1 Unit cost of patient service cost centers for A 039 SSS In-Patient (step – down)

	C4	C5
Total cost	180,446	23,625
Length of stay	34	8
Unit cost per day	5,307	2,953

5.1.9 Unit cost of patient service cost centers for J 069 SSS In-Patient (simultaneous method)

Table 5.10 Unit cost of patient service cost centers for J 069 SSS In-Patient (simultaneous method)

	C4	C5
Total cost	144,508	47,861
Length of stay	28	12
Unit cost per day	5,161	3,988

Unit cost of patient service cost centers for J 069 SSS In-Patient (step – down)

Table 5.10.1 Unit cost of patient service cost centers for J 069 SSS In-Patient (step – down)

	C4	C5
Total cost	144,357	47,249
Length of stay	28	12
Unit cost per day	5,156	3,937

5.1.10 Unit cost of patient service cost centers for K 359 SSS In-Patient (simultaneous method)

Table 5.11 Unit cost of patient service cost centers for K 359 SSS In-Patient (simultaneous method)

	C4	C5	C6
Total cost	337,185	207,397	263167
Length of stay	122	72	28
Unit cost per day	2,764	2,881	9,399

Unit cost of patient service cost centers for K 359 SSS In-Patient (step - down)

Table 5.11.1 Unit cost of patient service cost centers for K 359 SSS In-Patient (step - down)

	C4	C5	C6
Total cost	336,833	204,747	264,215
Length of stay	122	72	28
Unit cost per day	2,761	2,844	9,436

5.1.11 Unit cost of patient service cost centers for N 10 SSS In-Patient (simultaneous method)

Table 5.12 Unit cost of patient service cost centers for N 10 SSS In-Patient (simultaneous method)

	C4	C5
Total cost	361,270	15,954
Length of stay	94	8
Unit cost per day	3,843	1,994

Unit cost of patient service cost centers for N 10 SSS In-Patient (step - down)

Table 5.12.1 Unit cost of patient service cost centers for N 10 SSS In-Patient (step - down)

	C4	C5
Total cost	360,892	15,750
Length of stay	94	8
Unit cost per day	3,839	1,969

5.2 Simultaneous allocation VS. Step down allocation

From the result, Similarly the simultaneous method results in a more accurate allocation of costs than the step down method.

For step down (partial adjustments for interaction of overhead departments). The overhead departments are allocated in a stepwise fashion to all of the remaining overhead departments and to the final cost centers.

For Simultaneous (full adjustment for interaction of overhead departments). This method uses the same data but it solves a set of simultaneous linear equations to give the allocations. It gives the similar answer as step down method but involves less work.

5.2.1) Comparative the results by different methods

Table 5.13 Comparative unit cost of patient cost centers by step down and simultaneous method

Code	Department	Step down		Simultaneous	
		Bath Per case	Bath Per day	Bath Per case	Bath Per day
C01	OPD Service	773		771	
C02	OPD Dental	1,260		1,222	
C03	OPD Emergency + porter	863		875	
C04	IPD Ward 5	12,030	3,322	12,042	3,325
C05	IPD Ward 6	7,875	2,380	7,977	2,411
C06	IPD ward 7	22,018	5,000	21,931	4,980
C07	ICU + Hemodialysis service	49,735	11,114	50,414	11,265

Table 5.14 Comparative unit cost of top 5 illness of inpatient cost centers by step down and simultaneous method

(Bath Per Day)

Code	Department	Step down					Simultaneous				
		A09	K359	N10	J039	J069	A09	K359	N10	J039	J069
C04	IPD Ward 5	5,873	2,761	3,839	5,307	5,156	5,879	2,764	3,843	5,311	5,161
C05	IPD Ward 6	3,005	2,844	1,969	2,953	3,937	3,044	2,881	1,994	2,991	3,988
C06	IPD ward 7	11,009	9,436	-	-	-	10,965	9,399	-	-	

5.3 Hospital revenue

Source of Nakornthon Hospital revenue were out-of-pocket from Non-SSS patients including insurance company and social security scheme.

Table 5.15 Number of total SSS insured VS. total SSS revenue and total SSS cost in 2000

Year	No.of SSS (insured people)	OPD visiting	IPD case	Total SSS revenue (baht)	Total SSS cost (baht)
2000	42,971	90,034	1,627	47,268,100	88,549,340

Note : Total SSS revenue = No. of SSS * Capitation payment

(42,971 * 1100) = 47,268,100 baht.

Total SSS cost (see appendix C)

5.4 Cost recovery of SSS insured people

Table 5.16 Cost recovery of SSS at Nakornthon Hospital in 2000

Year	Total of SSS Visiting	Total of SSS Cost (baht)	Total of SSS Revenue (baht)
2000	91,661	88,549,340	47,268,100

Cost recovery is a comparison of revenue and cost.

Revenue is identified in 2 sources of revenue : 1) Non-SSS revenue or out of pockets sources 2)Social security scheme by capitation. In this study study only SSS so

In 2000 for SSS at Nakornthon hospital was loss about 41,281,240 baht. Cost recovery was (.53)

5.5 Total cost of patients service cost centers by seperate fix cost and variable cost

To find out real variable cost, I try to cut off fixed cost of the hospital (which is capital cost) and find variable cost only which are labor cost and material cost. The total hospital cost of Nakornthon hospital in 2000 without fix cost was show in table 5.17 that total direct cost was 168,388,207.46 baht. The proportion of labor and material cost is 55:45. The labor cost was higher than material cost . To find unit cost as in table 5.18 and 5.19

Table 5.17 Total Hospital Cost of Nakornthon Hospital in 2000 (No fix cost)

CODE	DEPARTMENT	LC	MC	TDC	%LC	%MC	%TDC
A01	Personel,Vechile,Guard	14,597,678.90	6,603,209.14	21,200,888.04	8.669062472	3.921420175	12.59048265
A02	Nurse administration	267,283.99	94,793.72	362,077.71	0.158730824	0.05629475	0.215025574
A03	Financing and Accounting	1,443,767.94	1,286,415.97	2,730,183.91	0.857404424	0.763958468	1.621362892
A04	Stock + Purchasing	413,238.77	271,159.28	684,398.05	0.245408379	0.161032227	0.406440606
A05	Maintenance (General,Medical)	7,325,700.19	6,991,092.32	14,316,792.51	4.350482911	4.151770736	8.502253647
A06	laundry	453,998.23	391,042.12	845,040.35	0.269614029	0.232226547	0.501840576
A07	Computer	1,487,582.03	1,344,838.65	2,832,420.68	0.883424114	0.7986537	1.682077815
A08	Medical Records and Statistics	602,672.74	531,864.91	1,134,537.65	0.357906738	0.315856388	0.673763126
A09	Housekeeping	1,605,639.44	1,544,278.36	3,149,917.80	0.953534374	0.917094126	1.8706285
A10	Social	1,349,605.03	1,065,618.17	2,415,223.20	0.801484291	0.632834203	1.434318493
B02	Clinical laboratory	4,825,626.26	4,547,756.37	9,373,382.63	2.86577447	2.700757041	5.566531512
B03	Radiology	3,452,729.86	3,263,521.06	6,716,250.92	2.050458231	1.938093593	3.988551824
B04	Rehabilitation	313,035.10	157,119.58	470,154.68	0.185900845	0.093307947	0.279208792
B05	Pharmacy	25,280,016.31	24,503,498.32	49,783,514.63	15.01293748	14.55178999	29.56472747
B06	Operating Room	4,195,260.64	3,310,344.98	7,505,605.62	2.491421878	1.965900718	4.457322596
B07	Nutrition	4,684,751.69	4,414,285.61	9,099,037.30	2.782113879	2.62149332	5.403607199
B08	Anesthetic	532,048.95	153,077.98	685,126.93	0.315965683	0.090907779	0.406873462
B09	Delivery Room	542,689.87	216,494.48	759,184.35	0.322284962	0.128568671	0.450853632
B10	Nursery + daycare	518,047.14	358,457.35	876,504.49	0.307650487	0.212875566	0.520526053
C01	OPD Service	1,731,315.39	1,217,668.92	2,948,984.31	1.028169024	0.723131945	1.75130097
C02	OPD Dental	921,943.75	861,606.51	1,783,550.26	0.547510876	0.511678652	1.059189528
C03	OPD Emergency + porter	1,923,450.51	1,275,108.26	3,198,558.77	1.142271504	0.757243206	1.899514711
C04	IPD Ward 5	2,595,116.64	1,669,962.60	4,265,079.24	1.541151058	0.9917337	2.532884757
C05	IPD Ward 6	2,277,406.05	1,663,423.46	3,940,829.51	1.352473599	0.987850328	2.340323927
C06	IPD Ward 7	2,555,419.22	2,001,282.63	4,556,701.85	1.517576117	1.188493339	2.706069456
C07	ICU + hemodialysis service	4,239,908.81	3,714,394.72	7,954,303.53	2.517936899	2.205852046	4.723788946
C08	MKT + ART	1,367,411.54	1,212,386.06	2,579,797.60	0.812058968	0.719994635	1.532053603
C09	PR + Operator	1,130,629.24	1,089,531.70	2,220,160.94	0.671442055	0.647035631	1.318477685
		92,633,974.23	75,754,233.23	168,388,207.46	55.01215057	44.98784943	100.00

Table 5.18 Unit cost of patient service cost center by seperate fix cost and variable cost (see appendix D for details)

Code	Department	Fix cost (baht)		Variable cost (baht)	
		Per case	Per day	Per case	Per day
C01	OPD Service	73	-	573	-
C02	OPD Dental	245	-	801	-
C03	OPD Emergency + porter	129	-	602	-
C04	IPD Ward 5	2,237	618	6,810	1,881
C05	IPD Ward 6	1,701	514	4,751	1,436
C06	IPD ward 7	6,454	1,466	12,045	2,735
C07	ICU + Hemodialysis service	13,963	3,120	30,657	6,851

Table 5.19 Unit cost of top 5 illness of in-patient cost centers by seperate fix cost and variable cost

Code	Department	Fix cost (baht)					Variable cost (baht)				
		A09	K359	N10	J039	J069	A09	K359	N10	J039	J069
C04	IPD Ward 5	1,092	513	714	987	959	3,325	1,563	2,174	3,005	2,919
C05	IPD Ward 6	649	614	425	638	850	1,813	1,715	1,188	1,781	2,375
C06	IPD ward 7	3,227	2,766	-	-	-	6,022	5,162	-	-	-

5.6 Break even analysis:

Break even analysis is the analysis of break even point where hospital revenue is equal to hospital cost which separate into fix and variable cost. (See appendix D)

(baht)

Total Cost	Fix cost	Variable cost
Social security scheme	12,946,055	60,693,137

Fix cost was 12,946,055 baht. So, fix cost per head was 12,946,055 / 42,971 = 301.27 baht. Variable cost was 60,693,137 baht. So, variable cost per head was 60,693,137 / 42,971= 1,412.42 baht.

Under the social security scheme, the amount of revenue per capitation (1,100 baht per year per head), which the revenue per head was lower than cost per head so the break even point could not be happened. Due to the hospital financing to be at break even point , is calculated by the following formula.

At break point of SSS . Total SSS revenue = Total SSS cost

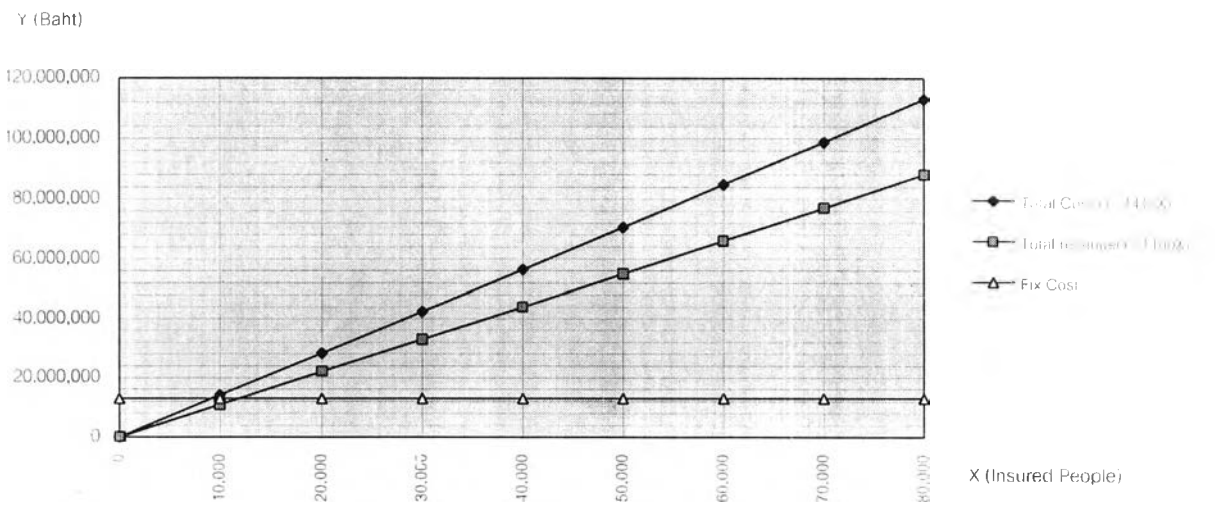
Which : Total SSS cost (TC_{sss}) = Fix cost (CC_{sss}) + Variable cost (LC_{sss} + MC_{sss})

Average SSS cost per head (AC_{sss}) = (CC_{sss})/Number of SSS insured people + (LC_{sss} + MC_{sss})/ Number of SSS insured people

Total SSS revenue = Number of SSS insured people * Capitation payment

Average SSS revenue per head (AR_{sss}) = Capitation payment

Figure 5.1 Break-even Chart



It is possible to use the break even chart to determine the profit or loss to be obtained from a certain level of sales (SSS insured people relate to revenue from capitation payment). The point at which the sales (SSS insured people relate to revenue from capitation payment) equal total cost is known as the break even point and in this study the chart indicates that cost is at 1,412 baht from variable cost and revenue 1,100 baht from capitation payment. The value of computing the break even point is that it is indicates the increasing in SSS service that business can suffer from loss. To reduce loss Nakornthon hospital should have major polices which suggested in chapter 6 .