A study on the cost and willingness to recruit EPA foreign nurses and care workers in Japan: from the angle of hospitals and care facilities

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Abstract   Japan started accepting foreign nurses and care workers under the Economic Partnership Agreement (EPA) in FY 2008. However, the number has been declining since FY2009 despite improved conditions. Many pointed out that the decline occurred mainly due to the constraints of supply side because the conditionality set by the EPA looked so strict for foreign workers. This paper highlights a problem of demand side – economic cost for the hospitals and care facilities (the employers). A questionnaire survey was conducted and used for examining a hypothesis that high costs for the employers were a major cause of the decline. The survey revealed that employing the candidates required high economic costs including additional staff labor. Majority of employers indicated unwillingness to recruit further EPA candidates. However, statistical tests proved no significant relations between the costs and the willingness for nurses, while some positive relationships were confirmed for care workers. It suggests that non-economic factors exert strong influence on the demand for nurses. The current EPA system needs substantial modifications including easing conditionality and reducing economic costs for employers.

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Ⅰ. Background

International migration of nurses and care workers from developing countries to developed countries is led by both "push" and "pull" forces[1,2]. Poor job opportunities and low income in source countries may be the former and labor shortages and better working conditions in destination countries can be the latter. A large wage gap between source and destination countries must be the main element. However, these forces are strongly influenced by policies especially taken on the pull side. Many developed countries imposed strict conditions on the migration of nurses and care workers.

Japan started accepting some foreign nurses and care workers under the specific conditions set by the Economic Partnership Agreement (EPA) in FY2008. Since then, about 1,800 Indonesian and Philippine workers arrived as "EPA candidates for registered nurses and care workers" (the candidates) in several batches. They were required to pass the Japanese national exams within the contract period (3 years for nurse and 4 years for care worker) while working in the contracted hospitals and care facilities (the employers). As time passed, it became known that this EPA system had many shortcomings. Among them were a high language barrier in national exams and extra burdens that the employers have to bear for training and education[3,4,5]. The Japanese government has taken some remedy measures such as using plain Japanese language in the national exam or intensifying training assistance. As a result the pass rate of the national exam gradually went up in recent years, especially for care workers (CW)[1].

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Despite these efforts, the number of hospitals and care facilities wishing to accept the candidates was on a declining trend[6]. In fact, the number of annual arrival of the candidates dropped from 645 in FY2010 to 202 in FY2012. It is no doubt that the shortcomings mentioned above are depressing both the candidates and employers. But are there other hidden factors discouraging them? Because of its short history, only few studies have addressed the burdens that the employers have to bear (i.e. demand side), though some studies tackled the problems of national exams and socio-cultural abrasion that the candidates encountered (i.e. supply side). This paper attempts to highlight the problem of demand side by analyzing the outcome of questionnaire survey on the employers and examining a hypothesis that economic factors, notably economic costs, lie behind the reduced entry of EPA candidates which started since FY 2008.

This study was approved by the ethical committee of the School of Medical and Health Science in the Nagasaki University.

Ⅱ. Methods

To highlight the problem of demand side and examine the hypothesis the study took three steps approach. First is a questionnaire survey on the employers aiming at deriving basic information on the economic burdens for the employers and other factors which may have an impact on the willingness to recruit further EPA candidates (the willingness). Second is the estimation of economic costs based on the data derived from the questionnaire survey in order to clarify to what extent economic factors became the employers' burden. Third is the statistical analysis targeting the relations between the willingness and estimated economic costs and other factors. Statistical tests are attempted to show if there is no difference in cost or other factors between those who replied "Yes" and "No" to the question on the willingness. A cross tabulation is also applied to confirm these statistical tests. As the institutional settings differ between EPA nurses and CWs[Ⅱ], questionnaire, cost estimate and economic analysis were conducted separately in the first instance but cross comparisons were made later.

(1) Questionnaire and data

To address the problem of demand side, a questionnaire was prepared in January 2012 and sent in mail to all 455 hospitals and care facilities that employed the candidates. The questionnaire contained 36 queries for hospitals and 33 for care facilities. The queries were prepared to cover as many potential cost and burden elements as possible because in the beginning we were unable to know which elements were more important. The questionnaire also included queries on the attributes of the respondents, request to the government and most importantly the willingness to recruit further the EPA candidates. The last item was added to test the hypothesis. The respondents were asked to reply either in numbers (e.g. amount of salaries paid to the candidates) or by selecting the most appropriate one (or two) from listed items or 5 different levels of agreements to the question.

Data for the analysis was derived from 38 hospitals and 76 care facilities who replied the questionnaire and had accepted the candidates more than a year earlier. These samples account for 22% and 31% of total hospitals and care facilities who employed the candidates.

(2) Estimation of economic costs

Direct expenses, salaries, and incremental staff labors required for the candidates make up the economic cost for the employers. Direct expenses include 1) commissions paid to official intermediaries, 2) travel costs of the candidates from and to their country, 3) expenses associated with language training and preparation for national exams, and 4) allowances for food and accommodation and others. In this study the first and the second expense items were estimated together as fixed cost because the employers have to pay a given amount once they have accepted the candidates. The third and the fourth items were also estimated as variable cost because the employers can decide their size with discretion. Subsidies from governments were treated as negative variable costs.

Salaries have a mixed nature of fixed and variable cost. Their levels become inelastic once the employer accepted contracts but they are often dependent on the length of working periods/hours and a bonus part is subject to the decision of the employers. In this analysis salaries were categorizes as variable costs but listed separately to allow for detailed cost analysis.

Incremental staff labor required for language training, national exam preparation, administration etc. becomes a broad sense of economic cost (opportunity cost) even if it does not result in actual cash expenses. This cost was estimated by multiplying the incremental labor hours and the wage rates of equivalent Japanese staff [Ⅲ]. In short, various cost terms are defined as

follows.

    Total variable expense（TVE）

      = variable expenses + salaries

    Total variable cost（TVC）

      = TVE + opportunity cost

        for incremental staff labor

    Total economic cost（TEC）

      = fixed cost + TVC

（3）Statistical analysis

  The main purpose of statistical analysis is to identify which factors affected the willingness most and test the hypothesis that economic factors have a significant impact on the willingness. For this purpose, all non-numerical survey results were converted to numbers by giving each non-figure reply item a corresponding number beginning 1,2,3···. Once all items were expressed in numbers, then a simple correlation matrix was made to find rough magnitude of relationship among 33-36 factors and in turn major potential factors affecting the willingness were identified. Lastly the hypothesis that economic costs for the employers have a significant impact on the willingness was tested by computing statistical values of cost factors and other potential factors identified. The least correlated factors were omitted from the test. A null hypothesis was tested for the relation between the willingness and selected indicators. A F-test based on one-way analysis of variance was applied for scale indicators such as economic costs and a chi-square test was used for order or attribute indicators such as burdensome feeling on major cost and labor items.

Ⅲ. Results

1. Estimated economic costs for the employers

（1）Attributes of samples

  About a half of those who actually filled the questionnaire were the persons in charge of EPA candidates. The other half was the heads of nurse sections in the hospitals and director generals or top administrators in the care facilities. The total number of EPA candidates employed there were 328, of which 110 as candidates for nurse and 218 as candidates for CWs. They account for 20% and 34% of the total number of EPA nurse and CWs that Japan accepted from FY 2008 to 2012. By nationality, 206 were Indonesians and 122 Philippines.

（2）Expenses

  The estimated average fixed cost per EPA worker was 801,000 yen for nurse and 799,000 yen for CW, almost identical and had very small variances. In contrast, the average variable expense per nurse was 50 thousand yen per month, nearly the double of that for CW because of higher training and education costs. The variance coefficient of variable expense was relatively large at 0.7-0.8, which we analyze later. The total cash expense per EPA worker defined as a sum of fixed cost and variable expenses for the whole contract period was estimated at 2.6 million yen for nurse and 2.1 million yen for CW.

（3）Salaries

  The average gross monthly salary for the EPA nurse was almost the same as that for the CW at around 170,000 yen（Table 1）. This amount was very close to the average monthly salary of equivalent Japanese nurses and CWs[Ⅳ]. In other words, the employers respected the condition set by the EPA that the wages of EPA candidates should be equivalent to the Japanese staff.

（4）Opportunity cost of incremental staff labor

  Employment of one EPA worker required additional

Table 1.　Estimated monthly salaries and bonus（thousand yen）

		Gross salary	Net Salary[1]	Bonus[2]	Gross salary incl. bonus
Nurse	average	170.0	131.4	2.8	208.6
	SD	29.2	22.4	1.4	38.6
	sample	37	35	36	36
Care worker	average	172.9	131.1	2.6	210.3
	SD	21.8	24.8	1.5	35.6
	sample	74	74.0	73	72

Note 1）: net after taxes and miscellaneous premiums were deducted

    2）: unit – month of monthly salary

staff labor of 43 hours per month for nurse and 20 hours for CW. Their distribution skewed to the lower side. About a half of the hospitals and 70% of care facilities said that the required additional labor remained within 20 hours per EPA worker per month. Some hospitals reported 150 hours of extra staff labor required. The opportunity cost of these labor hours are computed at 100,000 yen for EPA nurse and 36,000 yen for EPA CW. These values are much higher than the average variable cash expenses of 50,000 yen for nurse and 28,000 yen for CW. It is clear that employing EPA candidates generated a much higher economic cost than the actual cash expense.

(5) Estimated total economic cost

Table 2 summarizes the estimated economic costs. A broad sense of total variable cost can be defined as the sum of variable cash expenses, opportunity costs of additional staff labor and salaries. It was estimated at 360,000 yen per month per EPA nurse and 277,000 yen per CW on average. Assuming that the same amount accruing every month and the fixed cost arises only once, the total economic cost for the whole contract period was computed at 13.6 million yen per nurse (3 years) and 13.5 million yen per CW (4 years) or 6.2 million yen and 3.4 million yen if salaries were excluded.

2. Willingness to employ further EPA candidates

(1) Reply from the respondents

The questionnaire asked the respondents whether they wish to recruit further EPA candidates or not. About 80% of hospitals and 50% of care facilities said "No" as shown in Table 3. It is clear that majority of respondents were reluctant to employ further EPA candidates. In other word, demand for future candidates looks unexpectedly low.

In the questionnaire, the respondents who replied "No" were asked to select two from the listed 11 possible reasons. Only 10% chose item 5 "EPA candidates are too costly" (Table 4). However, "Heavy workload for management and administration" and "High physical/mental burden for other staff" may be regarded as a sort of labor cost problems. In addition, "Scant possibility of passing the national exam" and "No guarantee for the candidates to stay long" may be

Table 2. Estimated total economic cost per EPA worker
(average, million yen for contract period)

	Nurse		Care worker	
	3 years	%	4 years	%
Total variable cost	12.90	94%	12.71	94%
Variable expense	1.80	13%	1.33	10%
Total salary	7.51	55%	10.10	75%
Staff labor	3.60	26%	1.28	9%
Fixed cost	0.80	6%	0.80	6%
Total economic cost	13.60	100%	13.51	100%
(excl. salary)	6.19		3.41	
Total cash cost[1]	2.60		2.13	
Cost estimated by respondents	2.35		2.18	

Note 1) : Sum of variable expense and fixed cost

Table 3. Willingness to accept further EPA candidates

	Hospitals (for nurse)		Care facilities (for CW)	
	number	%	number	%
Yes	8	21%	37	50%
No	30	79%	37	50%
Total	38	100%	74	100%

Table 4. Reasons for not wishing to recruit further EPA candidates[1]

	reasons	Hospitals	Care facilities
1	Heavy workload for management and administration	19%	12%
2	High labor requirement & mental burden for other staff	19%	14%
3	Scant possibility of candidates passing national exam	17%	8%
4	No guarantee of candidates staying long	8%	15%
5	Candidates are too costly	8%	12%
6	Insufficient qualification of candidates	2%	2%
7	Possible troubles of candidates with other staff	0%	0%
8	Communication problems of candidates with patients	2%	0%
9	Limited Japanese language capacity of candidates	10%	5%
10	Opaque future of EPA system	13%	14%
11	Others	3%	18%
	Total numbers	63	65

Note 1）: Percentage of each item chosen as largest two reasons in total number of reply

meant by low and uncertain future benefits. If these four reasons are included, one may say that roughly a 60-70% of their reluctance came from economic factors.

（2）Statistical tests

To confirm the above observations, statistical tests applied for the relation between the willingness (i.e. demand for future EPA candidates) and the cost and economic factors.

The willingness for EPA nurse had no statistically significant relations with the cost factors nor other economic indicators including the number of affiliated entities, bed-nurse ratio and subsidies for EPA candidates (Table 5)[V]. This result was also confirmed by the Chi-square test between the willingness and the burdensome feeling against expense and labor items. As shown in Table 6, no statistically significant correlations exist for them too.

The willingness for CWs revealed a significant relation with some economic indicators such as incremental staff labor hour, gross salary (significant

Table 5. F-test result: Willingness to recruit EPA nurse and economic factors

Factors	Average	SD	SP[1]
Cost factors（per EPA nurse）			
Fixed cost	716.6	188.4	0.783
Variable expense /month	49.9	41.7	0.172
Gross salaries	170	29.2	0.77
Total variable expense	259.5	53.7	0.256
Staff labor	42.7	57.6	0.393
Total economic cost	13641	5331	0.226
Estimates by respondents	235	109.7	0.329
Other economic factors			
Number of affiliated entities	21.9	34.2	0.169
Bed-nurse ratio	1.9	0.9	0.533
Subsidies for EPA candidates	243.7	176.7	0.495
Ratio of drop-off EPA candidates	0.1	0.2	0.886

Note: Significant probability in simple F-test. Degree of freedom are 32-36

Table 6. Chi-square values: Willingness to recruit EPA nurse and burdensome items

Burdensome item	χ^2	DF	SP
Salaries of EPA candidates	3.767	3	0.288
Education/training cost	0.514	3	0.916
Language training	3.796	2	0.15
National exam preparation	1.9	2	0.387
Coordination among staff	8.091	4	0.088
Trouble shooting with patients	2.31	3	0.511
Administration labor	2.222	3	0.528

Table 7. Statistical test values: willingness to recruit EPA CWs and economic factors

	Average	SD	SP[1]
Cost factors（per EPA worker）			
Fixed Cost	705.3	224.5	0.216
Variable cost /month	27.8	21.6	0.371
Gross salary	172.9	21.8	0.021*
Total variable expense	241.1	45.1	0.073
Staff labor	13874	3437	0.643
Total economic cost	218.3	106.6	0.8
Estimates by respondents	19.5	20.7	0.036*
Other economic factors			
Number of beds	87.1	36.9	0.447
Number of affiliated entities	44.7	66.5	0.15
Bed-nurse ratio	1.9	0.6	0.546
Subsidies for EPA candidates	212.8	240.8	0.058
Ratio of drop-offs	0.1	0.3	0.074
	χ^2	DF	SP
Satisfaction with EPA worker	13.587	4	0.009**
Coordination among staff	9.448	4	0.05*

1）Significant probability in simple F-test. The degree of freedom are 62-67.

2）**: significant at 1％ level. *:significant at 5％ level

at 5％ level), and the degree of satisfaction for the candidates (significant at 1％ level). Subsidy for the candidates and drop-off rate had also relatively high correlations (Table 7). These results indicate the existence of some sensible economic relationship between the willingness for the EPA CWs and economic factors.

3. Relation with economic evaluation made by respondents

Table 8 shows the result of cross tabulation between the demand for EPA candidates and the economic evaluation made by the respondents[VI]. It is striking that even those hospitals who admitted some positive return from the current EPA nurses replied "No" for the recruitment of further EPA nurses. All the five respondents who said the EPA nurses being "profitable even now" or "profitable now if the EPA nurses were counted in the calculation of nurse-bed ratio"[VII] replied "No". The eight respondents who considered "the current EPA nurse being financially balanced if other positive aspects were counted" also said "No" except for one respondent.

In contrast, no such relations were seen for the EPA CWs. Majority of respondents who replied "financially balanced if counted in the minimum requirement" or "investment for future" wanted to recruit the EPA CWs in future too. On the other hand, six of seven

Table 8. Cross tabulation: willingness to recruit EPA candidates
and financial evaluation made by respondents

Financial evaluation made by respondents		Hospitals			Care facilities		
		Willingness			Willingness		
		Yes	No	Total	Yes	No	Total
Profitable even now		0	3	3	0	0	0
Profitable now if counted as qualified staff		0	2	2	10	8	18
Profitable if they keep working many years		2	5	7	5	7	12
Balanced if other positive aspects are counted, though not profitable by its own		1	7	8	4	8	12
Investment for future staff shortage		1	2	3	12	7	19
Investment for future operation abroad		2	3	5	2	1	3
Not profitable		0	7	7	1	6	7
Total		6	29	35	34	37	71
χ^2 SP		0.465			0.221		

respondents who regarded the candidates "not profitable" answered "No" for the further recruitment. All these results are economically sensible and seem to support the hypothesis.

Ⅳ. Discussion

This study examined the hypothesis that economic factors lie behind the reduced entry of EPA candidates which started since FY 2008. The questionnaire survey revealed that the current EPA system forced the employers of EPA candidates to bear considerable economic costs. The estimated total economic cost per EPA worker reaches four to six million yen for the contract period even if the salary for the candidates was excluded. Provided that the employment of EPA candidates holds such additional risks as failure of candidates in the national exam or their turn over after passing the exam, the employers would not find sufficient economic incentives to invest such costs in the candidates. In fact, only 20% of hospitals and 50% of care facilities wished to recruit further EPA candidates. Under the current EPA system, it is likely that "pull" force is not fully working in the market of foreign nurses and CWs in Japan.

Nevertheless, the statistical tests of the survey results did not support the hypothesis in many cases. No relation was found between the demand for EPA nurses and the economic factors including costs. This may be partly attributed to the "technical reasons" such as small sample numbers（38 hospitals and 76 care facilities）, observation bias arising from the attributes of respondents[Ⅷ]（only 16% in hospitals and 48% in care facilities were the head of management）, classifying salary to variable costs, and disturbances caused by reverse causal relations（e.g. spending more because demand is high）. Complex financial structure in the hospital business may have blurred the nurse cost issues too[Ⅸ]. As this is the first case that Japan accepted foreign nurses and care workers, the employers' motives were not centered on costs. The employer may have recruited the candidates "as a test case" or "to prepare for the globalization"[5,7].

Apart from these technical reasons, however, there is a high possibility that other non-economic factors are having a strong impact on the demand for EPA foreign nurses. They may include the necessity for rigorous Japanese language skills in hospitals, medical/ health care system and custom which are specific to Japan and different from other countries[8,9,10], high threshold in the national exam, and/or a spirit of pursuing best services in the Japanese nurse society. The current system for recruiting foreign nurses seems to have more fundamental problems other than high economic cost for the employers.

Encouraging results came from the study on the EPA CWs. Although statistical tests did not fully support the hypothesis and a small number of reversed causal relations were found, some positive relations were derived between the demand for the EPA CWs and economic indicators. A cross tabulation proved the economically sensible relation between the demand and the perceived profitability for the candidates.

Table 9. Cross tabulation: willingness to recruit EPA candidates by position of respondents

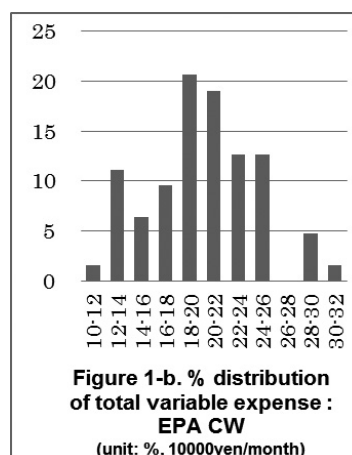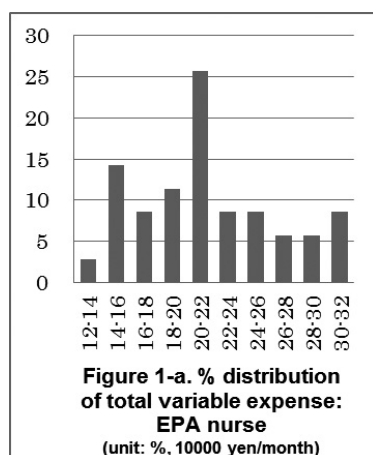| Nurse				CW			
	willingness		total		Willingness		Total
Respondents	Yes	No		Respondents	Yes	No	
Presidents	0	1	1	Presidents	17	9	26
Secretary general	3	2	5	Secretary general	3	6	9
Head of nurse section	3	13	16	Head of care section	4	0	4
Others	2	13	15	Others	12	21	33
total	8	29	37	total	36	36	72
χ^2 SP	0.151			χ^2 SP	0.019		

Another tabulation analysis indicates that presidents are willing to recruit further candidates while section heads or persons in charge of EPA CWs were reluctant (Table 9). We may be able to conclude that in case of EPA CWs, economic factors have more influence on the demand for foreign workers than the case of EPA nurses. As time passes and care workers' market gets tighter, this relation should be much clearer.

Salary of the EPA worker could have been a large negative factor for the demand because the EPA asks the employers to pay the candidates "equivalent wages" to Japanese workers. The questionnaire survey confirmed that the employers respected this rule, paying 210,000 yen on average for both nurses and CWs even though the candidates had limited knowledge and experience in Japan. However, only few respondents replied that high salaries were burdensome. This can be the reflection of the employers' adaptive efforts which are partly appeared in the large variance of salaries. Some employers offered as much as 280,000 yen while others paid 170,000 yen. The tendency becomes clearer for the EPA nurse if we make a histogram of the total variable expense by adding other variable expense (Figure 1-a). It indicates that there are two distinctive types, a low spending type and a high-spending type apart from the average ones. In future a polarization might occur between the hospitals who regard the candidates as a source of low cost labor and the ones who consider them as a precious replacement of skilled labor.

The comparison of Figure 1-a and Figure 1-b also endorse the view that economic factors are working differently for hospitals and care facilities. The distribution pattern of total variable cost for CWs is more normal than for nurses, which suggests that cost factors influence more straightly in care facilities than hospitals.

The above observations suggest that cost and economic factors may be an important determinant for future demand for EPA candidates especially for CWs. But to prove it, more careful follow-up surveys and detailed analysis have to be done. As for the EPA nurse, multidimensional analysis covering non-economic factors is impeccable.

Figure 1-a. % distribution of total variable expense: EPA nurse
(unit: %, 10000 yen/month)

Figure 1-b. % distribution of total variable expense : EPA CW
(unit: %, 10000yen/month)

Note: unit is % in the total hospitals (vertical axe) and 10,000yen per month (horisontal axe)

It is certain that international market for nurses and CWs will be increasingly tighter as the trend of rapid ageing and lowering birth rate will be accelerated both in developing countries and emerging counties. In order to assure the sufficient supply of quality nurses and CWs, Japan should address not only the problems of supply side (i.e. barriers to the candidates) but also the problems of demand side, (i.e. economic and noneconomic hardships for the employers), by offering more economic incentives and reducing institutional barriers.

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8) Japan International Corporation of Welfare Services (JICWELS): About the result of visiting the facilities that accepted foreign nurse candidates in FY 2010: 32-39, 2010.

9) JICWELS: About the result of visiting the facilities that accepted foreign care worker candidates in FY 2010: 23-28, 2010.

10) JICWELS: Report on the study of EPA nurses, 173-179, 2013.

Notes

I. http://www.mhlw.go.jp/file/04-Houdouhappyou-10805000-Iseikyoku-Kangoka/0002.pdf

II. For instance, the contract period is 3 years for the nurse candidate and 4 years for the care worker. National exams also differ for the two in terms of frequency and requirement for technical knowledge.

III. 2,340 yen per hour for nurse and 1,820 yen for care manager (Wage structure basic survey 2011, the Ministry of Health, Labor and Welfare)

IV. Average monthly salary of below 24 year age nurse assistants with 0-4 year experience ranges 143,000-180,000 yen and that for care workers ranges 147,000-190,000 (the Wage structure survey 2011).

V. However, we have to keep in mind that, in the case of F-test for hospitals, reliable intervals by which correlation are rejected tend to be wide because the degree of freedom is small.

VI. In the questionnaire, in addition to the actual expenses, the respondents were asked to select a range of total cost estimates per EPA candidate for the entire contract period.

VII. To assure a decent medical care quality, the health insurance scheme offers higher compensation payments for hospitalization to those hospitals whose nurse-bed ratios are lower.

VIII. Another tabulation analysis suggests that management heads still recruit the candidates while persons actually.

IX. Profitability of hospital business is determined by many other factors such as the cost and quality of medical doctors, the number of patients in clinic, bed-patient occupancy rate, efficiency of facilities etc.