

Determining the Timeliness to Conclude the Medical Equipment Procurement Process – A Study at the Regional Directorate of Health Services (RDHS) in Gampaha, Sri Lanka

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Abstract: Procedures and systems related to the procurement process does differ based on different countries, governments, sectors, organisations etc. but general consensus is that, the adopted process involves three (3) main stages identified as planning, purchasing and contract management. In the Sri Lankan health sector too, these key stages are prevalent in the procurement of medical equipment however, various concerns have arisen with regard to the timeliness of the current processes. The objective of this study, was to determine the average time taken for completion of each stage of the procurement process of medical equipment in the government health institutions, under the purview of the Regional Directorate of Health Services (RDHS) in Gampaha, Sri Lanka. This was a descriptive study done based on information gathered for the period of 2014/2015 related to the procurement activities of medical equipment at RDHS, Gampaha which, is the main health service provider for the second highest populated district in Sri Lanka. For this study, procurement records of medical equipment purchased in years 2014 and 2015 using any type of funding source were analysed, centred on three (3) fact sheets used to gather necessary quantitative data. A total of 78 state sector health institutions are under the purview of RDHS, Gampaha and the officers at the Planning unit, Biomedical Engineering unit and Accounts branch were involved in buying the required medical equipment. Based on a total sample of 245 equipment categories a sample of 243 records were identified where different funding sources had been used for procurement and data was collected from the three (3) main units. This study revealed that, the actual time taken for supplying the procured equipment was 347.08 days when compared with the calculated average time of 192.31 days. It was noted that an overall delay of 154.77 days was experienced in completing the process which, was exacerbated mainly due to factors such as deferments in project approvals and delays by suppliers. It can be concluded that, stringent government guidelines and greater cohesiveness among the officials handling the procurement process, would enhance the efficiency and timeliness in purchasing required medical equipment by the state health sector institutions, in Sri Lanka.

Keywords: government, health, medical equipment, procurement, process, timeliness.

1. INTRODUCTION

1.1 Background of the study

The “building blocks” of the health system framework as described by the World Health Organisation (WHO) consists of six elements^[1] and one such key element is technology and logistic supply. In a more descriptive form, the definition of the word technology from a healthcare perspective, encompasses medical devices as well, apart from other relevant

aspects. Furthermore, medical equipment which, is identified under the category of medical devices ^[1], is an integral component in providing quality healthcare facilities for patients.

Substantial cost ^[2] is incurred in the procurement of medical equipment which, has a significant impact in the effectiveness and safety aspects of the healthcare services provided by health institutions. Timeliness is a key aspect in the purchasing process of critical equipment in the health sector and it has been identified that, certain causative factors tend to prolong the lead time in receiving ordered goods. Some of these reasons include ^[3] issues pertinent to planning of required material, delayed receipt of technical evaluation reports, lack of procurement skills, weak supplier relationship and late acknowledgment ^[4] of already prepared estimates. Considering the magnitude of goods, services and capital assets purchased by government institutions, it is imperative for such public procurement activities to be handled by, well trained ^[5] and competent persons.

The procurement processes in the health sector differs based on each country's government policies. Sri Lanka's public procurement system, is based on a set of comprehensive national procurement guidelines introduced in 2006 by the National Procurement Agency of the Ministry of Finance. Enacted by law, these guidelines and manuals are applicable to all public procurement processes happening at central, provincial, regional and agency level in all government as well as semi government organisations. In Sri Lanka the Biomedical Engineering division of the Ministry of Health is accountable for the procurement, maintenance and management of medical equipment required by most of the government hospitals while the Provincial Councils also get involved in this process ^[6], when needed.

The procurement methods adopted in general by the provincial institutions are identified as National Competitive Bidding (NBC), limited national competitive bidding, shopping and repeat ordering ^[7]. There are key stakeholders and different committees which, get involved at provincial and regional level when procuring medical equipment. In this regard, the Procurement Committee (PC) should consist of a minimum number of three participants while different types of committees can be formed at departmental, ministerial and cabinet level based on the type of the government organisation and permissible monetary limit. Additionally, the Technical Evaluation Committee (TEC) which, has been set up for the evaluation of goods and services and is jointly responsible ^[8] with the PC in facilitating the procurement process. The formal approval of a minimum of three committee members is needed, when evaluating purchases below the threshold of (Sri Lankan Rupees) LKR 10 million. Tenders under this process are awarded only to registered suppliers with the relevant procurement entity and an invitation, is extended to the prospective bidders (or suppliers) through a newspaper advertisement ^[6] published well in advance or by way of a formal invite.

The implementation of the Provincial Councils Act in 1989 devolved the state sector health services in Sri Lanka and accordingly the Regional Directorate of Health Services (RDHS) functions under the administrative purview of the Provincial Governor, Chief Secretary, Provincial Health Ministry and Provincial Director of Health Services ^[9] respectively.

2. OBJECTIVE

To determine the average time taken to complete each stage of the procurement process of medical equipment at the RDHS, Gampaha, Sri Lanka.

3. METHODOLOGY

3.1 Description of Study Area

This was a descriptive study done on health institutions, to identify the various factors affecting the timeliness of the procurement process of selected categories of medical equipment, in state sector hospitals in Sri Lanka. Regional Directorate of Health Services Gampaha, located in the Western Province of Sri Lanka was selected as the study setting, for the period of 2014/2015. Recognised as the second highest populated district ^[10] in Sri Lanka with a population of 2.3 million, the RDHS Gampaha is considered as the main health service provider for the district and there is a massive demand for medical equipment by the preventive and curative health institutions in the district. There are seventy eight (78) state sector health institutions in the district of Gampaha [11] consisting of two (2) District General Hospitals (DHSs), three (3) Base Hospitals (BHs), eleven (11) Divisional Hospitals (DHs), forty six (46) Preliminary Care Units (PCUs) and sixteen (16) Medical Officers of Health (MOHs).

The Planning unit, Biomedical Engineering unit and Accounts branch at RDHS, Gampaha gets involved, in the procurement process of medical equipment as shown in Figure 1 and the relevant staff have been assigned specific job roles to ensure completion of the procedures. Further, the purchasing process of the required equipment is done over a period of two (2) consecutive years and it usually starts with the requests being made in the month of March, of the current year. With these requests being prioritised and incorporated in the annual plans, the funding method for procurement is decided and sent for approval to the relevant authorities. Usually there are two (2) definite funding sources for health institutions in the Western province of Sri Lanka and these are known as Provincial Specific Development Grant (PSDG) and Provincial Development Grant (PDG). Additionally, commencing from year 2014 a special funding allocation has been arranged by the World Bank to support the provincial health sector and it is identified as the Health Sector Development (HSDP) grant. Further, line ministry funding and decentralised budgetary allocations (i.e. other funds) are also provided for procurement purposes but these sources are random and uncertain. Since year 2012, a substantial allocation of capital (funding), has been allocated to the RDHS, Gampaha, Sri Lanka for procurement of medical equipment while 32.06% had been assigned for year 2014 and 43.28% for year 2015.

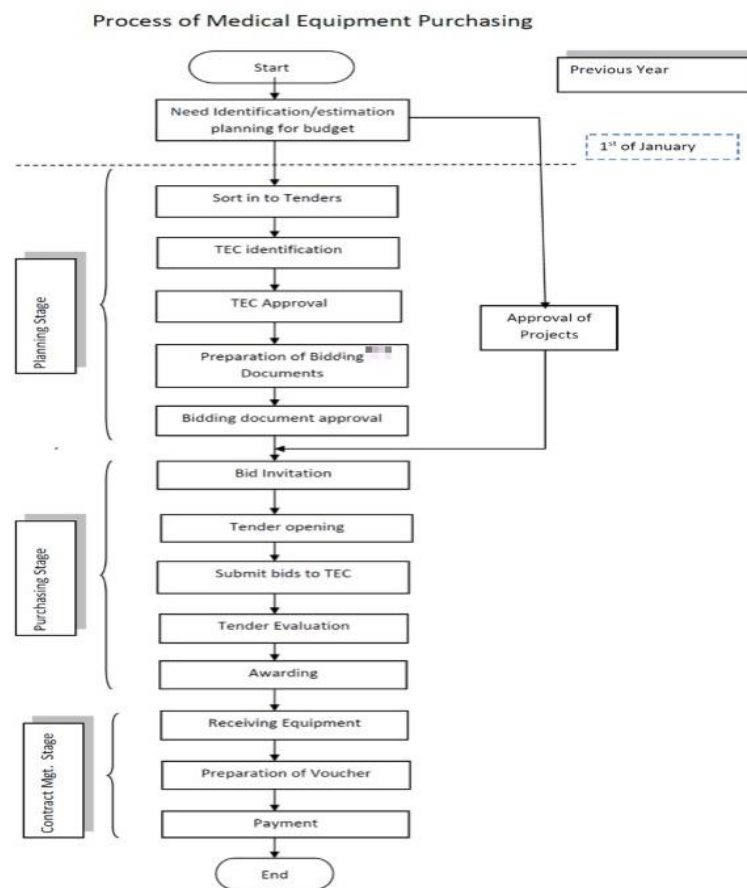


Fig. 1: Medical equipment procurement process map

This study was carried out over a period of nine (9) months starting from November 2015 while the data was collected during the period of April to June 2016. Furthermore, as an initial step retrospective gathering of secondary data was carried out based on available records. Ethical clearance was obtained from the Ethics Review Committee, Faculty of Medicine, University of Colombo, Sri Lanka. To comply with administrative requirements formal written permission was obtained from the Provincial Director of Health Services, Western province and RDHS, Gampaha, Sri Lanka.

3.2 Study Variables

To find explanations to the identified key objective and sub objectives of this research, the overall study population consisted of two components i.e. (1) stakeholders of the procurement process and (2) records of medical equipment procured in years 2014 and 2015. To study the timeliness of the procurement process, medical records indicating details

of medical equipment purchased by RDHS Gampaha using any type of funding source in 2014 and 2015, was considered. Medical records consisting a total number of two hundred and forty three (243) equipment categories were identified based on two hundred and forty five (245) equipment types purchased in 2014 and 2015, which provided a 99% realisation rate in required gen.

3.3 Study Instruments

Pre tested, structured fact sheets were used to scrutinise the medical equipment procurement records of years 2014 and 2015 and vital quantitative data was collected for analysis. The secondary data was collected from the Planning unit (i.e. information relevant to annual plan budget and progress), Accounts branch (i.e. bill settlement details), Bio medical Engineering unit (i.e. tender details) and Biomedical stores (i.e. equipment receiving and distribution details) of the RDHS in Gampaha, Sri Lanka. From a more detailed perspective other variables included, selected categories of medical equipment, funding source, numbers of tenders and methods of purchasing.

3.3.1 Data collection

As shown in Table 1 the relevant data was collected from the respective three (3) main units of the RDHS, Gampaha in Sri Lanka to perform a comprehensive analysis on purchasing medical equipment.

Table 1: Data identified for analysis purposes

Unit	Collected data
Planning	Dates of when the requirements were identified, cost estimations, type of funding included in the annual plans, approval date of projects, funding source considered, quantity, name/s of equipment, names of institutions requested and the progress measured based on monthly project progress reports
Accounts	Date of voucher (receiving), type of funding source, name of the supplier company and date of payment
Biomedical Engineering	Dates of; when the equipment categories were identified, appointment of TEC, preparation of tender document/s, approval of tender document/s, tendering, tender opening, evaluation, awarding and receiving of items

3.3.2 Study Variables

A particular tender comprises of several different categories of medical equipment and accordingly, each such category was considered as “one study unit”, irrespective of the quantity of equipment included. Further, a particular selected category for data collection purposes did indicate the same date of procurement while, according to the location (i.e. which unit/ section of the particular health institution) of use, nine (9) sub categories were also identified. Information revealed that, four (4) types of funding sources have been used which, included (1) provincial grants (i.e. PDG and PSDG), (2) foreign funding (i.e. HSDP), (3) line ministry funding and (4) special funding or criteria based funding. Three (3) methods of purchasing medical equipment documented as (1) open tenders/ National Competitive Bidding (NCB), (2) shopping and (3) limited quotation were adopted during years 2014 and 2015, by the staff at RDHS, Gamapaha, Sri Lanka.

3.4 Measures

For operational definition purposes procurement year was considered as the “current year” and the previous year was not considered since the time frame remained same, with regard to identification of equipment purchasing and making annual plans. It should be noted that, this premise does not have any effect on the monitoring and evaluation phases of the procurement process for both years. Table 2 defines the three (3) main stages of planning, purchasing and contract management, along with the sub stages and the time period of operationalization relevant to the procurement procedure adopted by RDHS, Gampaha.

Table 2: Identified stages of the procurement process of medical equipment and operationalization of time taken for each sub stage

Stage	Operationalization	
	Date of commencement	Date of completion
Planning stage		
<i>(Defined as the time taken from 1st of January of the current year to the date of the bidding document approved by the Tender board)</i>		
Approval of project	1 st of January	Date of project approval
Sorting into tenders	1 st of January	Date of finalising into tenders
TEC identification	Date of finalising into tenders	Date of TEC nomination
TEC approval	Date of TEC nomination	Approval date of TEC by PDHS
Bidding document preparation	Approval date of TEC by PDHS	Date of completion of preparation of bidding documents
Bidding document approval	Date of completion of preparation of bidding documents	Tender board approval for document
Approval of project	1 st of January	Date of project approval
Purchasing stage		
<i>(Defined as the time taken from the date of bidding document approval to the date of awarding the contract to the supplier)</i>		
Bid invitation	Tender board approval for document	Calling for bids
Tender opening	Calling for bids	Opening of tenders
Submit bids to TEC	Opening of tenders	Receiving bids by TEC
Tender evaluation	Receiving bids	Finish evaluation
Awarding	Finish evaluation	Awarding the contract
Bid invitation	Tender board approval for document	Calling for bids
Contract Management stage		
<i>(Defined as the time taken from awarding the contract to the supplier to the date of receiving medical equipment)</i>		
Receiving equipment	Awarding the contract	Receipt of equipment
Preparation of voucher	Receipt of equipment	Preparation of voucher
Payment	Preparation of voucher	Payments
Receiving equipment	Awarding the contract	Receipt of equipment

Based on data collected through the questionnaire, the average of the time predicted by the experts (i.e. respondents) was considered as the “standard time” for that particular stage, as illustrated in Table 3 and this was recognised as the assessment tool.

Table 3: Predicted time in days for each stage of medical equipment procurement process by the respondents

Sub stage	Number of responses	Percentage (%)	Average time predicted for the whole process (days)	Average time predicted from tendering stage (days)	Sub stage
Identification at institutional level	6	5.4%	32.17		
TEC identification	5	4.5%	10.60		

TEC approval	5	4.5%	8.40		
Tender document preparations by TEC	6	5.4%	11.33		Planning stage 72.80
Approval of tender document by tender board	6	5.4%	10.30		
Identification at institutional level	6	5.4%	32.17		
Tendering	6	5.4%	8.17	8.17	
Tender opening	8	7.2%	21.00	21.00	Purchasing stage 60.67
Average time is taken to sending the offers to TEC	6	5.4%	5.50	5.50	
TEC Evaluation	7	6.3%	15.43	15.43	
Awarding	7	6.3%	10.57	10.57	
Receiving of equipment	7	6.3%	48.00	48.00	Contract Management stage 58.84
Preparation of vouchers	6	5.4%	3.17	3.17	
Payments	6	5.4%	7.67	7.67	
Total	111	100%	192.31	119.51	192.31

Based on information given by the key informants, the average total time predicted in completing the procurement process (i.e. excluding project approval date) was 192.31 days and commencing from the tendering stage it was 119.51 days, as per the above analysis.

4. RESULTS AND DISCUSSION

Purchasing of selected categories of medical equipment for the period of 2014/15 was analysed, based on the funding sources and were identified on a calendar year basis. Information relevant to year 2014, indicated a total number of 113 medical equipment had been distributed and a quantity of 130 in year 2015, as the total for years 2014/15 amounted to 243. HSDP has been the main funding source for the procurements, with 41.6% (n=47) of the funds used in year 2014 and 54.6% (n=71) used in 2015. Relating to the allocation of funds for distribution of “selected medical equipment based on the source of funding” it revealed that, the total allocation for year 2014 was LKR 95.02 million and for 2015 it was LKR 264.85 million, with the total amounting to LKR 359.87 million. The allocation of funds indicated that, HSDP has funded 49.5% (LKR 189.02 million) in year 2015 and has been the largest funding source (60.9%) in 2014 as well. In addition, the allocation based on the type of funding source for the period under review was 29 tenders in 2014 and 39 tenders in 2015, with a total of 68 for years 2014/15. During this period one third (n=22) of the total tenders were funded by PDG. A total number 2159 equipment had been purchased during the period of analysis, with the highest amount of 1350 procured in year 2015. Major funding source had been HSDP (n=1331) followed by PDG (n=594). Based on the type of funding, in year 2014 the main method adopted (94.7%) for tendering had been NCB (n=107) and HSDP was the key funding source with an allocation of 41.6% (n=47). A similar outcome was seen in year 2015 as well, with the main implemented mode of tendering being NCB (83.1%) to procure a quantity of 108 medical equipment and the major funding source had been HSDP (54.6%) to procure a quantity of 71 needed equipment.

Analysis of the calculations done with regard to the time taken for each stage of the medical equipment procurement process at RDHS, Gampaha, Sri Lanka was evaluated under the (1) planning (2) purchasing and (3) contract management stages, respectively. In summary, the results revealed that based on the basis of average number of days used up for the

planning stage according to the source of funding, the highest number of days had been spent on projects funded by the line ministry. During this phase of the procurement process, 225.62 days had been spent on identifying items or medical equipment, 278.6 days spent on planning and 233.62 days used up for approving the projects. In contrast, the lowest number of days used up for these same sub stages had been for the projects funded by the PSDG, during years 2014/2015. In the purchasing stage, the longest time of 115.58 days on average had been spent on projects funded by HSDP while the shortest duration of 48.6 days on average had been spent on line ministry funded procurement projects. Reaching the contract management stage of process, the results showed that, the longest duration of 90.91 days on average had been spent on projects which, have been funded by HSDP and the shortest duration of 41.42 days on average, had been spent on line ministry funded projects. Considering the distribution of average number of days taken for each stage in the medical equipment procurement process for years 2014/15 at the RDHS, Gampaha, Sri Lanka it should be noted that, most number of days in the planning stage (i.e. 269.15 days in 2014 and 295 days in 2015) had been used up for projects funded by the line ministry and a lower number of days, have been spent on projects funded by PSDG. Similar analysis for the purchasing stage for the same period indicated that, a longer period of 115.92 days was spent on procuring projects funded by HSDP and the shortest duration of 49.41 days on line ministry funded projects. In the contract management stage, 89.61 days have been spent on HSDP funded projects which, indicated the distribution of highest average number of days while lowest number of days of 44.87 days had been spent on the projects procured using line ministry funding. Furthermore, distribution of time overrun for this stage, based on the population of tendered equipment and relevant funding sources showed that, the highest overrun was with regard to HSDP funded projects (70.3%) for the period of 2014/2015. In summation, Table 4 shows the distribution of average number of days taken, based on the type of funding for the entire procurement process, for the period of 2014/2015 by the RDHS, Gampaha, Sri Lanka.

Table 4: Average number of days taken for the entire procurement process according to the funding source for the period of 2014/2015

Funding source	Both years (2014 & 2015)			
	Average time taken for the planning stage	Average time taken for the purchasing stage	Average time taken for the contract management stage	Average time taken for the entire process
PDG	165.50	89.08	74.08	328.67
PSDG	132.06	100.47	89.00	321.53
HSDP	141.47	115.58	90.91	347.95
Line ministry funds	278.60	48.60	41.42	368.62
Other	236.63	66.25	56.25	359.13
Total	178.03	93.33	75.72	347.08

Accordingly, highest average number of days of 368.62 days was used up to procure projects funded by the line ministry while the lowest number of days of 321.53 was spent to procure projects funded by PSDG. The total number of days used up in completing the entire medical equipment procurement process was 347.08 days.

5. CONCLUSION

This study revealed various factors which, have had an impact on the orderliness and timeliness of the procurement process of medical equipment at the RDHS, Gampaha, Sri Lanka in years 2014 and 2015. Based on feedback provided by the respondents, the predicted average number of days or time period was identified as a “base”, for analysing and comparing the results obtained from this study. Empirical studies ^[12] have shown that, the act of public procurement is extremely stringent and failure to comply with, would cost a great deal. Furthermore, widespread criticism has been levelled against the process of purchasing, since many departments or units in institutions/ organisations perceive that, a longer time is needed to procure new equipment. In Sri Lanka, timeliness is maintained by adhering to the procurement

time schedule which, explains the sequence of each individual procurement action in relation to time ^[8], starting from the point of commencement of the process and up to its completion. As per the National Procurement guidelines (2006), it is the responsibility of the relevant procurement entity to prepare this schedule in consultation with the TEC and PC. The schedule which, includes two (2) main stages identified as stage one and stage two, does not specify any standard timings in general but it has mentioned fixed time frames for opening of tenders under different tendering methods and the maximum number of days stipulated for suppliers, to supply the ordered items. In this study, the overall analysis revealed that, the actual time taken for completion of all three (3) stages in the medical equipment procurement process, was much more, when compared with the predictive time that was established, based on the responses given by the experts. Also, in terms of a more progressive assessment, if the project planning sub stage was completed in the previous year and if the new projects were approved on the first working day of the current year, total predicted time would have been 119.51. However, if the planning is also started on the same year (i.e. current year) the average time predicted would be 192.31 days but in the actual scenario it had taken 347.80 days for completion. This delay has been attributed to additional number of 154.77 days (22.11 weeks) taken by the supplier/s, to supply the equipment. Procurement is not identified as a single activity but consists of a sequential chain of events ^[3]. Taking into account the impact of other identified issues, the active management of three (3) key stages ^[13] (i.e. planning, purchasing and contract management) is of prime importance, to manage the effectiveness and the timeliness of the procurement process at the RDHS in Gampaha district.

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