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Factors affecting timelines of procurement of works identified in annual plan at regional directorate of health services of Gampaha-Sri Lanka

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Abstract
Procurement delay in construction projects is considered as one of the most recurring problem in health sector in Sri Lanka. Delay in procurement has adverse effects on project success in terms of cost, time and quality. Authority and the accountability of construction works in almost all health institutions in the district are vested with respective Regional Directorate of Health Services (RDHS).This study was aimed at identifying factors affecting timeliness of procurement of Works identified in annual plan of RDHS Gampaha. The Method consisted of qualitative interviews with relevant staff and experts in the field and desk reviewing of files related procurement of works (n= 124) in the RDHS. Study concluded that most of the steps of procurement of works were delayed at RDHS Gampaha. Statistically significant delay was noted in relation to designing and estimation as one of the major factors of all categories of works when compared with National Procurement Guideline. Lack of technical feasibility study of projects, poor budgeting, late initiation of procurement process, unavailability of a procurement plan and PTS, poor Coordination among main stake holders were identified as a factor affecting the timeliness of construction procurement.

Keywords: procurement delay, construction projects, technical feasibility

Introduction
Delay is considered as the most recurring and distressing problem in construction projects and it is more endemic in some developing countries. Delay in procurement of works is a major contributing factor for the projects delay which in turn has adverse effects on project success in terms of cost, time, safety and quality (Sambasivan and Soon, 2007). The factors affecting construction procurement vary from country to country depending on the political and economic status, management style and advancement of technology (Addo *et al*., 2O15) [15].

More than 50% of the capital allocation of health ministry is utilized for the construction works. Health budget has remarkably increased by more than 100% of capital allocation from 2011 to 2017(Ministry of Health, progress and performance report, 2017)

Almost all preventive care health institutions and most of the hospitals in the district are managed by the respective Regional Directorate of Health Services (RDHS). Each fiscal year, a lot of construction works takes place under the purview of RDHS. Nearly 50% of their capital budget is invested in procurement of works because it is essential for smooth functioning of health care services in the district (Finance Commission Annual Report, 2016).Having a large number of construction requirements at the district level, despite the limited fund allocation, creates the major challenge of maximum utilization of the scarce resources in an effective way at the RDHS level.

RDHS division of Gampaha consists of 16 hospitals including two District general hospitals, three base hospitals, 16 MOH divisions, 45 Primary Care Units and 181 Maternal and Child Health Clinics. Implementing authority of the constructions of these health institutions is vested with the RDHS Gampaha.

Justification
Time, cost and quality are considered as vital elements of construction projects. Consequences of the inappropriate construction procurement include cost overrun, time overrun, disputes, and litigation, (Amoatey *et al.*, 2015) [1] which could be prevented by having a better understanding of the process of construction procurement. Prompt attention and awareness of the process of construction procurement are essential to achieve a successful construction project completion. It will further enhance the effectiveness of investment of scare resources in health sector.

This study identifies the factors which affect the timeliness of procurement of works in Gampaha district. There are many studies conducted worldwide of this nature to find out aforesaid factors affecting construction industries. But there are little scientific research information in relation to procurement of construction works in health sector. Furthermore, in Sri Lanka, this kind of study has not been carried out in government health sector before. Hence, it is important to identify the factors as most of them are believed to be correctable. Timeliness is one of the important aspects which affect each stage of the construction process. This study provides necessary knowledge to fulfill this gap to formulate the time guidance for the whole procurement process. Hence this study is carried out to achieve the following objectives.

Objectives

General Objective

To identify and describe factors affecting timeliness of procurement of works identified in annual plan of Regional Directorate of Health Services Gampaha during year 2017/2018.

Specific Objectives

1. To describe process of procurement of works at RDHS division Gampaha.
2. .To determine the timeliness of completion of procurement of works in RDHS Gampaha
3. 3 To identify factors affecting procurement of works identified in the annual plan - RDHS Gampaha.

Literature Review

Construction works in the Health Sector

Timely and appropriate completion of construction in health facility is one of the principal objectives of all parties concerned and unexpected delay, cost overrun and risk can cause considerable difficulty to all stakeholders specially for the health authorities (Greenwood *et al.*, 2001) [17]. Construction in health sector also has been expanding with remarkable increase of capital budget. But many difficulties with regard to performance of the projects were highlighted by finance ministry. Significant number of large construction projects which were identified in the annual plan (line ministry) 2016 were considered as low performance projects (Ministry of National Polices and Economic Affairs, 2016). Mean time Auditor General Report 2013 indicated that some projects had 100% time overrun. Annual report (2016) of the finance commission pointed out that repeated amendments to the annual plans reflects the poor identification and poor procurement practices of projects

Process of completion of construction projects

In Sri Lankan provincial health sector, construction projects involve three main parties namely department of health as the client, provincial engineering organization as the consultant and contractors as the service provider.

Walrath (2007) [15] says that poor requirement analysis and procurement are the most contributing factor for construction project failure. Master plan acts as an important guiding and facilitating tool for hospital development. It provides a basis for area organization and identification of choice of actions. Hence hospital master plan is an action directing mechanism in planning of future health care facilities (Mendes and Medrano, 2007) [9]. Guideline, 2009 further describes that identification of the activities needs to be done well before mid of previous year. Stakeholder meetings, feasibility studies land acquisition and prioritization and estimation of activities should be carried out before the development of the plan.

Process of procurement of works

Public procurement is defined as a process by which procurement entity purchase the inputs for vital public sector investment. Procurement process consists of procurement planning, contracting, execution and supervision (National Procurement Manual, 2006). Further, the manual describes that a sound procurement system must have features such as maximizing Economy, efficiency, effectiveness and transparency while adhering to standards, specifications, local laws rules and regulations.

Procurement manual 2006, describes that Preparation of a master procurement plan, detailed annual procurement plan and procurement time schedule (PTS) are important part of construction procurement to make the projects a success. It provides the most effective procurement arrangement with ideal timeframe for each step of procurement process of construction project. Hence any procurement entity should have a procurement plan for the particular year.

Procurement entity should confirm the preparation of bidding documents, environmental examination, social impact assessment, land acquisition etc prior to commencement of the construction procurement. PE uses the appropriate bidding document.The Procurement Committee is responsible for the entire procurement process. Regional Director of Health Services consists of a RPC. The procurement committee is basically responsible for ensuring the availability of funds for the Planed Procurement Action, reviewing the Procurement Time Schedule, Reviewing the evaluation report of TEC and making decisions with TEC on type and nature of bidding (National procurement Guideline, 2006).

Procurement entity can practice various procurement methods according to the situation depending on time, nature, value and size of the projects. Commonly used procurement methods include National Competitive Bidding (NCB), National Shopping and Direct Contracting (DC).one of the most frequently practicing method at regional levels national shopping (NS) which is appropriate to procure readily available goods, work and service of small value with standard

Good procurement management system should have an effective plan, strategy, time management and good bid evaluation method enabling smart and fair contracts (Eduardo Talero, 2004).To minimize the risk of the traditional procurement systems, various other methods can be practiced. Some of them are design and build, Management contracting, build operate and transfer (BOT) (Lucy W Chege, 2002).

As far as the public sector construction is concerned, even in a small renovation, there is a high chance of delay at any stage of the process. Three main causes identified for the delay in construction procurement process are namely, inaccuracy of the project scope, delay in evaluation lack of contractor support and lack of preset task structure. (Stephen Cannen, 2006).

A study on Provincial public sector procurement management (Velnampy and Kamalarupan, 2009) [14] stated that procurement management practices in northern and eastern provinces were suboptimal and improvement of knowledge, skills of managers who involve in public procurement and incorporation of technology in to procurement management were recommended.

Timeliness of completion of construction procurement

Timeliness is one of the most important factors when the construction projects completion is concerned. Timely completion of the construction procurement is the most universal measure of the actual success of the projects. (Gene Wortham, 2012).In Saudi Arabia, only a 30% of construction projects were completed within the scheduled time (Assaf and Al-Hejji, 2006). Mean while in Malaysia, 17% of government construction projects were considered as “sick” due to delay or abounded. Mohamad (2010) stated

that the time and cost have a parallel relationship where increasing of the time will increase the cost.
Time frame for the each step of construction work has been stipulated in procurement manual and guideline (2006) is shown in following tables.

Table 1: Construction Contract time period (in days) for design and estimate/ procurement / construction

Value in Rupees million	Feasibility Investigation and designs & estimation	Procurement	Constriction (implementation)	Total
5 - 25	70	140	210	420
1 - 5	35	105	105	245
0.5 - 1	28	42	70	140
< 0.5	21	28	32	105

Source: National Procurement Manual 2006

Table 2: Time Frame for Procurement Actions for construction Projects (without Pre-qualification) All Values are given in Rupees million and periods in days

Activity	25 -100	5 - 25	1 - 25
Scrutinizing and recommendation of bidding documents by TEC	7	7	7
Invitation for Bids	7	7	7
Closing of bids	28	21	21
Evaluation by TEC	28	14	14
Review of TEC recommendation by PC	7	7	7
Determination by procurement committee	7	7	7
Issue of letter of acceptance	1	1	1
Signing of Contract agreement	2	2	1

Source: National Procurement Manual 2006

Methods

Study design

Descriptive cross sectional study design was adopted. The study consists of qualitative and quantitative methods.

Study setting

Study settings consist of office of the RDHS Gampaha and Engineering organization of Western province.

Study duration

Study was carried out during October 2018 to July 2019.

Sampling Method

Purposive sampling technique was adopted for qualitative interviews. Government health sector construction procurement process involves many professionals in the different sectors. Therefore, representative personnel of various disciplines were selected as sample for the Focus Group Discussions (FGD) and key Informant Interviews (KII). Accordingly two FGDs and 5 Key Informant Interviews were arranged. Following personnel were selected as the sample in the identified sectors.

Health sector

Provincial Director of Health Services, Regional Director of Health Services, Assistant Directors Planning, Head of the institution, Medical Officers Planning, Development Officers in planning units, Management Assistant and Accountants.

Engineering organization of Western province

These respondents included Director-Provincial Engineering organization. Divisional Engineer, Technical Officers, Director - Building - Provincial Engineering Organization.

Quantitatively all projects, excluding some projects according to the exclusion criteria were obtained to the Study accordingly 124 construction projects identified.

Exclusion criteria

Minor works which were less than one hundred thousand rupees as it does not require following routine procurement procedure.

Data collection method

The key informant interviews and FGDs were conducted to obtain their practice, views, suggestions and extensive information in relation to construction procurement.

1. Focus Group Discussion.

After obtaining informed consent, information was collected verbally by the principal investigator. The FGD interview guide consisted of a series of open-ended and sample probing questions. Questions were asked from the participants about current process of construction procurement in RDHS area, their role and perception on timeliness and support of other involved parties, barriers, experience, opinion on improvement.

Key informant Interviews

Based on the field of expertise, and degree of involvement on construction procurement. Representatives from health sector, engineering organizations and higher officials of western provincial council were purposively selected for KIIs.

Secondary data was collected by using a structured data sheet. Whole process of procurement of works was identified and timeliness of each process was found using the structured data sheet. Data were gathered from the project files available in the administrative and planning unit of RDHS office. Data sheet was prepared by the principal investigator with the support of supervisor and planning team of the RDHS office. Data sheet was based on literatures mainly National Procurement Guideline and manual and supported by some information explored during qualitative interviews. Data extraction was done by the principal investigator himself.

Data analysis

Content analysis was used to analysis of qualitative data. In this procedure, data was categorized as verbal for the purpose of classification, summarization and tabulation.

Data entry and statistical analysis was carried out by principal investigator. Format for data entry was made on Microsoft excel programme and imported to the SPSS. Percentages, averages/mean were used in the analysis for description of data. Average/ mean time period of each stage of procurement was calculated. Comparison was done against the stranded time frame given in National Procurement Agency manual and guidelines. One sample test was applied for continuous variables at necessity.

Operational definitions were giving below.

A. Basic information about construction projects

- Scale of the project – scaling of projects was based on the value of estimate for the particular project and categories were done according to the national procurement guidelines. categories were identified based on the estimated value as appropriate for tender limit of regional procurement committee at RDHS.(projects with estimated value of less than 0.5 million rupees, projects with 0.5 to 01 million rupees, projects 01 million to 05 million rupees and 5 to 10 million)

- Method of procurement-According to the national procurement manual, several procurement methods can be practiced by regional procurement committee. Eg; National competitive bidding, National shopping and direct contracting methods.
- Time taken for preparation estimate of a project - Time period between dates of making request to engineers/ technical officers for estimation to date of receiving bill of quantity(BOQ) of particular project from the Engineering Organization.
- Projects amendment in annual plan- changing of name or allocated value of a project after obtaining of initial approval
- Time taken for recommendation (scrutinizing) of bidding documents by technical evaluation committee - Time period between date of sending bidding document to date of receiving TEC recommendation for bidding documents
- Time taken for made bid invitation -Time period between dates of receiving TEC recommendation for bidding documents to date of invitation of Bids.
- procurement method (national competitive bidding (NCB) /national shopping/ direct contracting)
- Time taken for TEC evaluation - Date of tender opening to date of submission of TEC Report.
- Time taken for contract awarding - Time period from date of TEC approval to date of awarding.
- Time taken for procurement process - Time taken from date of receiving estimate to date of signing of agreement of contract.

Validity

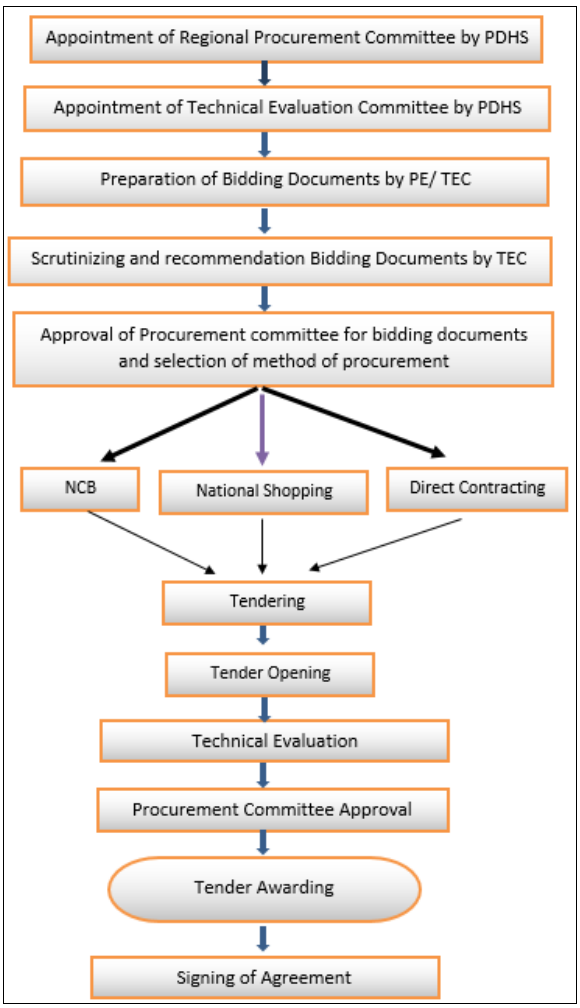
Quantitative secondary data was collected by using structured data sheet which was formulated with the involvement of procurement and planning team. it was pretested in different setting and identified errors were corrected. Principal investigator himself collected all the data to ensure the validity.

Results

Results describe the current process of procurement of works, timeliness of procurement of works and factors affecting procurement of works at RDHS Gampaha.

Description of the procurement process

Procurement process consists of different sub stages as revealed by the study and description of these stages is shown accordingly.



Source: Authors' compilation based on qualitative study

Fig 1: Flow Chart of Procurement Process

Responses of Focus group discussions and key informant interviews with relation to procurement stage of construction projects

Table 3: Description of Procurement Process

Comments /Description	Respondent
Regional Procurement Committee is appointed by the PDHS in January every year. It is consisted of RDHS as the chairman and the accountant of the RDHS office and one hospital director serve as members. Procurement limit of RDHS is 10 million LKR & limit for shopping is 02 million.	RDHS, Accountant of RDHS & PDHS
Appointment of Technical Evaluation Committee is done by the PDHS. One TEC was nominated for all the construction projects of a given year. The members were the Administrative Officer of the RDHS Office, Accountant of a hospital and relevant divisional engineer. Once the detailed estimate was received by the RDHS, Request was made to relevant divisional engineer to prepare bidding documents.	PDHS,RDHS, Accountant of RDHS & PDHS
Once the recommended bidding documents were received and approved by the procurement committee, the method of procurement was selected depending on the value of the estimate and the remaining time period.	Accountants, Divisional Engineer
National Competitive Bidding was practiced for the projects of more than 01 million rupees of estimated value and national shopping was practiced for below 01 million projects. Direct contracting of registered organizations or government institutions like SEC was done occasionally. In NCB, tender was advertised in one national paper and a period of 03 weeks given for bidding. In shopping method five quotations were called from suitable registered contractors and allowed a time period of 02 weeks for bidding.	RDHS, Accountant of RDHS & PDHS, Management Assistant(MA) of the subject
Technical evaluation is done mainly by the relevant regional engineer/technical officer and the usual practice was that the other two member of the committee agree on the decision. The Procurement committee approved the lowest responsive bidder recommended by the technical evaluation committee.	RDHS, Accountant of RDHS & PDHS, MA, Divisional Engineer(DE)
Tender is awarded in written with the details of the performance bond and the date of commencement of work. Agreement was signed by the relevant contractor within a week of awarding of the contract with the RDHS	Accountant, MA

Source: Authors' compilation based on qualitative study

Table 4: Distribution of average time taken for project design and estimation according to the value of project

Value of the estimate of the work (Rs Mn)	Average days taken for estimation
< 0.5 Mn	37
0.5 -1 Mn	63
1-5 Mn	76
5-25 Mn	98

Source: Authors' Survey data

The average time varied from 37 days to 76 days to prepare estimates for the projects during the study period. Stipulated time given for designing and estimation of projects in National procurement manual (2006) for above categories is 21, 28, 35 days respectively. Average time taken for all categories is more than comparing to standard time given in NPM and results obtain from one sample t-test show statistically significant difference for each category ($P < 0.05$)

Table 5: distribution of projects/Works exceeding the standard time[1] for design and estimation

Value of estimate (Rs Mn)	Projects exceeded standard time	%
< 0.5 Mn	50	88.9%
0.5 -1 Mn	32	91.7%
1-5 Mn	19	82.0%
5-25 Mn	03	27.2%
Total	**104**	**83.8%**

It was observed that 83.8% (n=104) out of 124 projects exceeded the standard time for estimation and design. Less than 20% project were timely estimated.
Time given in National Procurement manual

Table 6: Distribution of average time taken for TEC recommendation (scrutinizing) for bidding documents

Value of the estimate of the work (Rs Mn)	Average days taken for scrutinizing of bidding documents bt TEC
< 0.5 Mn	7.0
0.5 -1 Mn	6.2
1-5 Mn	7.0
5-25 Mn	15.0

Source: Authors' Survey data

Table 7: Distribution of average time taken for bid invitation

Value of the estimate of the work (Rs Mn)	Average days taken for bid invitation
< 0.5 Mn	6.80
0.5 -1 Mn	4.50
1-5 Mn	7.57
5-25 Mn	14.0

Source: Authors' Survey data

Average time taken for bid invitation for projects valued less than 0.5 million was 6.8 days Average time taken for bid invitation for projects valued more than 1million was 7.5 days.

Table 8: Distribution of projects according to the procurement method

year	Procurement Method						Total
	NCB		Shopping		Direct Contract		
	No	%	No	%	No	%	
Total	11	8.8%	105	84.6%	08	6.4%	124

Source: Authors' Survey data

The most preferred procurement method was shopping, being practiced at 84.6 % (n=105) of the instances.

Table 9: Distribution of average time taken for Technical Evaluation

Value of the estimate of the work (Rs Mn)	Average days taken for Technical Evaluation
< 0.5 Mn	7.7
0.5 -1 Mn	23.1
1-5 Mn	29.6
5-25 Mn	45.2

Source: Authors' Survey data

Average time taken for evaluation of projects 1 -5 million was 29 days, while projects with estimates <0.5 million LKR was less than 8 days.

Table 10: Distribution of average time taken for awarding of the projects

Value of the estimate of the work (Rs Mn)	Average days taken for awarding of the projects
< 0.5 Mn	5.3
0.5 -1 Mn	10.7
1-5 Mn	12
5-25 Mn	17.2

Source: Authors' Survey data

Average time taken for awarding of the projects valued 1 -5 million was 12 days, while projects with estimates <0.5 million LKR was 5.3 days.

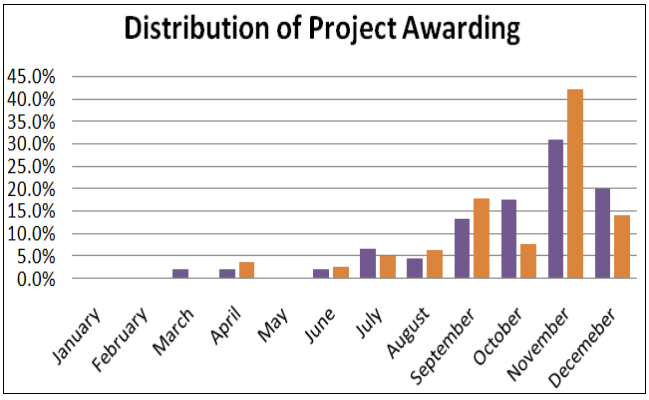


Fig 3: Distribution of awarding of projects according to the month.

Most of the projects have been awarded in the month of November in both years. Nearly 15% of projects were awarded even in month of December

Table 11: distribution of projects exceeding the standard procurement time *

Value of estimate (Rs Mn)	Projects exceeded standard time	%
< 0.5 Mn	37	65.1%
0.5 -1 Mn	17	44.7%
1-5 Mn	2	14.3%
5-25 Mn	5	45.4%
Total	61	49.1%

Source: Authors' Survey data

* The time given in National procurement manual

Total of 56 projects (49%) were exceeded the standard time given in National procurement manual. 5 project valued more than 5million exceeded the standard time period. Majority projects valued less than 0.5million exceeded the standard time period.

Factors affecting procurement of works

This component describes factors affecting construction procurement.

Results consist of views of respondents of Focus group discussions and key informant interviews

Table 12: Description of factors affecting procurement stage of construction projects

	Identified Factor	Description	Respondent
01	Unavailability of a procurement plan	No annual procurement plan at districts and provincial level for procurement activities identified in annual plan	PDHS, Director Engineering, RDHS,DE,MO Planning
02	Delay in scrutinizing and recommendation of bidding documents	Delay occurs for some project	MA/Accountants/ D.Engineering
03	Delay in TEC reports	TEC recommendation was delayed for some projects.	RDHS/PDHS/Planning teams/DE
04	Inadequate bidders	Non representation of bidders for some construction projects like renovation of sewerage system and contractors are reluctant to bid at end of year with tight schedule.	MA/Accountants/Director Engineering
05	Selection of inappropriate contractors	Some contractors are not capable since they do not Posses technical and financial capacity for health care construction projects. This issue was prominent with shopping method.	MA/majority of respondents of planning teams and Engineering teams,
06	Delay in procurement process	Even for small construction takes significant time period.	Some respondents of all sectors
07	Lack of awareness on procurement procedures	Knowledge of health managers and planning team on procurement procedure need to be strengthen.	Some respondents in health sector

Source: Authors' compilation based on qualitative study

Seven factors were identified. Most widely agreed factors were unavailability of procurement Plan and delay in TEC.

Discussion

Findings of the study were interpreted according to the stages of construction procurement process by using qualitative and quantitative data simultaneously. Interpretations were mainly based on the local guidelines including provincial and line ministry of health, National Procurement Agency and Finance Commission of Sri Lanka.

Lack of availability of project estimates for budgeting of annual plan was a major concern according to majority of respondents. Only few projects were budgeted based on tentative estimates prepared by engineering organization and most projects were budgeted using approximate values. In view of engineering team it was due to inadequacy of man power.

Findings of the qualitative interviews revealed only minority of the project estimates were available at the time of development of annual plan. Furthermore, design and estimation process itself has consumed considerable time duration. Further each value category of projects shows statistically significant delay ($p<0.05$) when compared to the time durations stipulated in the National Procurement Manual (NPM). Majority of estimates were received in month of October of current year. Hence only 3 months were available to complete remaining stages of the process.

Study revealed that significant number of projects was amended during the study period. Project amendments even after the initiation of procurement stage were also identified. One of the reasons behind this scenario could be the irrational budgeting without proper project estimates. Furthermore lack of assessment with regard to technical and cost feasibility.

Phasing out for several years (several stages) without clear forecasting was identified. further procurement was done each year and stage separately. This is mainly due to the inadequate funds allocated for a given year. Hence only a portion of the Building was identified and contracted to match the available allocation. This was highlighted in the Auditor General Report 2013.According to the procurement manual 2006, this phasing out is prohibited when a continuous flow of funds is not assured.

Some stages of the procurement process started late and some of the steps were followed according to the manuals. Overall Timeliness of procurement process was unsatisfactory for small works. Further technical evaluation of construction works has taken significant time periods.

Unavailability of a procurement plan was identified as a factor in this study hence this has to be taken in to consideration by higher authorities. Furthermore, NPM (2006) indicated that any procurement entity should have a procurement plan. In agreement Treasury circular, 2015 on zero based budgeting has further indicated the necessity of such a plan. Suboptimal selection of capable contractors was identified as a reason for delay.

Conclusion

Study concluded that most of the steps of procurement of works were delayed at RDHS Gampaha. Statistically significant delay was noted in relation to designing and estimation as one of the major factors of all categories of works when compared with National Procurement Guideline. Lack of technical feasibility study of projects, poor budgeting, late initiation of procurement process,

unavailability of a procurement plan and PTS, poor Coordination among main stake holders were identified as a factor affecting the timeliness of construction procurement.

Recommendations

The prompt and continuous attention to the factors affecting each sub stage of the process of procurement of works is crucial for overall project success. Therefore following actions are recommended after careful analysis of the finding identified during the study period.

- Early initiation of procurement planning is recommended.
- Carrying out technical feasibility studies with the participation of the technical experts prior to inclusion of construction projects to the annual plan is suggested to reduce frequent amendments and delay.
- Realistic budgeting should be ensured by obtaining tentative estimates from engineering team for the proposed works prior to inclusion in the plans in the given year which will prevent undesirable consequences.
- Human resource shortage of the Western Province Engineering Organization should be estimated and fulfilled to eliminate most of the factors that contribute to delay in estimation and evaluation.
- Increasing awareness about the procurement processes and guidelines among the relevant stakeholders by regular reviews, workshops and provision of adequate continuous training to the staff members and regular supervision by the administration must be encouraged.
- Coordination between health and engineering departments and continuous follow up needs to be strengthened.
- The preparation of a good procurement plan, procurement time schedules should be encouraged by guidance and improved awareness of the relevant staff.
- Computer based process tracking system should be formulated.
- Initiation of practicing of E- procurement practices
- Enhancement of procurement authority level of RDHS

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