

Measuring the Performance of the Completed Construction Projects through Users Committees: A Case of Khairahani Municipality, Chitwan, Nepal

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ABSTRACT

The projects in Nepal continuously faces issues of expected performance though at local level performance is strictly time bounded. To measure the performance of the completed construction projects through Users Committees in terms of execution time & cost contribution.

The study was solely the project performance of the Municipality implementing through UCs of the 33 sites using Opinion survey, checklist survey. The primary and secondary data and information were collected through different tools as questionnaire survey, Key Informant's Interview, Checklist and field visits. The Descriptive content analysis produces the measures of selected project performance.

Overall performance of project executing by UCs was satisfactory. The projects through UCs have been completed within the budget. There is not time control mechanism in the projects since work schedule was not prepared and followed. Most of projects were completed on time of one year and all projects were completed within estimated cost. Due to less managerial and technical skill of UCs, inadequate supervision by the technicians, unavailability of skill persons at local levels and with no laboratory provision in the projects implementing through UCs, the quality of construction work could not be assured as QAP was not in use. For the transparency, the project information board is displayed at sites in the projects budgeting equal to or greater than 10 lakhs. Public Audits are also conducted in all the projects. The projects after the work completion have been examined and cleared within 30 days after completion. The empirical aspects of project implemented through users committee has been analyzed and pragmatic recommendations have been made for assuring effective performance.

Keywords: Community Participation, Heritage, Conservation, Community Development

INTRODUCTION

Execution estimation is characterized as the most common way of assessing execution comparative with a characterized objective. It gives a feeling of where we are and, all the more significantly, where we are going (Rose, 1995). Rose additionally expressed that estimation can direct consistent progression toward laid out objectives and recognize deficits or stagnation. Willis and Willis (1996) kept up with the significance of estimating execution since it will show status and heading of an undertaking.

It is generally acknowledged view that, at any rate, execution proportions of a task depend on time cost and quality (Barkley and Saylor, 1994). Atkinson (1999) noticed that these three parts of task execution as the ‘iron triangle’. In any case, Kumaraswamy and Thorpe (1999) thought about assortment rules in estimating a venture. This incorporates meeting financial plan, plan, the nature of workmanship, partner’s fulfillment, move of innovation, and wellbeing and security. Additionally, Chan and Hat (2000) noticed that different other key parts likewise utilized in estimating project execution like wellbeing and security, ecological execution, client assumption/fulfillment, entertainer’s

fulfillment and business esteem. Subsequently, in this article, six factors have been recognized for estimating project execution. They are cost, time, quality, clients’ fulfillment, wellbeing and security and usefulness (Azlan S Ali and Ismail Rahmat, 2010).

Statement of Problem

Most of the beneficiaries’ also have inadequate feeling of ownership over the projects. They feel that the government should be responsible for providing funds for operation and maintenance. Most of the projects remain unmonitored. Even though municipal level annual progress review of the program is conducted at the end of the fiscal year as a formality to fulfill the legal provision only. The question arises about the quality of completed work. The UCs ceases to exist after the completion of projects. Projects are left unmonitored and nobody takes responsibility for their operation and maintenance of completed projects.

OBJECTIVES

To assess the existing contractual formation process of Users Committees to measure the performance of the completed construction projects in practice of Khairahani Municipality Chitwan, Nepal.

METHODOLOGY

Research Matrix

Table 1: Research Matrix

Objectives	Data Collection	Analysis	Expected output
To measure the performance of the completed construction projects through Users Committees in terms of execution time & cost contribution.	Opinion survey, checklist survey	Descriptive content analysis	The project were completed within time and within allocated budget

RESULTS AND DISCUSSION

Performance of the Construction Projects

The performance of the projects implementing through the UCs depends upon the various parameters. Some of the parameters which directly or indirectly affect the project performance are discussed here.

Work Distribution within Users Committees

Based on the responses provided by the UCs regarding work distribution in 79.79% of projects, work distribution within UCs was by the mutual understanding of UCs members, and in 21.21% of projects, the work distribution was carried by the president of UCs as shown in Figure 1.

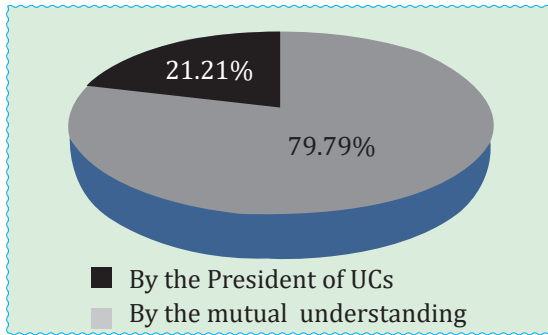


Figure 1: Work Distribution Among UCs

The work distribution within Users Committee by the mutual understanding of UCs members would be more participative for smooth execution of the construction work. But in some cases, the technicians assist in the work distribution within UCs members.

As per PO&M (2075), Paragraph (2), Rule (6) The duties and rights of the User's Committee shall be to make the work of the User's Committee effective, to divide the work of the members of the committee and to divide the responsibilities, Properly work distribution expedites the construction work at site. Due to the less technical and managerial knowledge of construction, only UCs are not capable to the distribution of work. The technicians and UCs members together decide the division of work will be an appropriate approach for the work distribution within UCs. This approach will be practical and make responsible for quality and timely completion of the project. This approach shows the transparency of the work.

Meetings of Users Committees

Based on the responses provided by the UCs regarding meeting all of the respondents answered that meetings were held as per need. Similarly, on selected projects too, all 33 projects the meetings of UCs were held as per need. As per response provided by the UCs, the meeting were conducted for the following needs.

- For contract agreement
- Work division
- Running Bill payment

- Extension of Time
- Final Payment Bill

But as per the project checklist survey regarding the meetings (institutional process) of UCs for different agenda of the project construction & implementation process, It was found that the Out of 33 UCs, all 33 UCs were conducted two Mass meeting to form UC & Before final payment, it is found that No UCs were conducting Pre project construction Meeting, Work distribution meeting & Post contract management Meeting, But it was found that 4 nos of UCs were conduction Running Bill payment meeting & another 6 nos of UCs were conducting time Extension meeting.

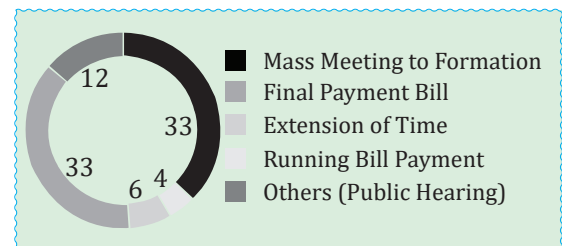


Figure 2: Types and number (In total) of Meeting Conducted by UCs

As per PPR (2064), Rules (97), Sub-rule (6) - The users' committee or beneficiary community shall have the technical evaluation of the work, bills, receipts and other documents proving the expenditure of the work of each installment endorsed by its meeting and submit the same to the concerned public entity.

The result showed the general mass meeting were held for payment. The meetings held by UCs play an important role for the smooth execution of the work. The number of meetings held by the UCs shows the accountability and responsibility of the UCs. The regular meeting by the UCs increases the interaction among the users which increases the social cohesiveness and minimizes the management problems and social issues. This results the enhancement of quality of work and timely completion of the project.

Beneficiaries Contribution in the Project

Based on the project checklist survey regarding the project contract amount and contribution percentage, it was found that the total contract amount for the all 33 project was NRs. 7,83,04,218.93, among of that NRs.

6,72,02,553.19 was allocated by municipality and remaining NRs. 1,11,01,665.74 was contributed by UCs. And among the total amount of contribution NRs. 1,07,12,089.90 was cash & NRs. 3,89,575.84 was kind contribution.

Table 2: Total Estimate Amount and Source of Fund for Selected Projects

SN	Project name	Project Code	Contract Amount (NRs)	Allocated by Municipality (NRs)	Contribution By UC (NRs)	
					Cash	Kind
1	Lothar Rapti Dike New spar construction	1	5931884.55	5457333.17	402846.66	71704.72
2	Faseragaunko Baatoma Dubai Tarfanaala Nirman	2	1158942.32	1000000.00	150000.00	8942.32
3	Ganesh Chowkbatomuni Deep Boaring	3	5791525.00	5000000.00	750000.00	41525.00
4	Darai Home Stay Nirman	4	2883072.67	2875000.00	0.00	8072.67
5	Ward no 11 Pidrahani Gaida chowk dekhi woda karalaya jane Baato	5	1801060.29	1500000.00	300000.00	1060.29
6	Lothar Rapti Dike New spar construction	6	3847986.87	3540147.92	307838.95	0.00
7	Janakpur Dhal Nirman	7	1153473.72	1000000.00	150000.00	3473.72
8	Umraha Gholmaa Wall Nirman	8	1155081.95	1000000.00	150000.00	5081.95
9	Niraulako Ghardekhi Malpothudai Uttar tarfa Pathakko gharhudai pampha Kholasamma Naala Nirman	9	1153414.09	1000000.00	150000.00	3414.09
10	Bhuwanishankar Multipal College Infrastructure Construction	10	1161123.23	1000000.00	150000.00	11123.23
11	Woda no 5 koKhairahaniChowk-dekhi RNP Seemanasammakalopatre	11	3006561.53	2500000.00	500000.00	6561.53
12	Dhungre Khola Puldekhi PurbaTarp-phako Dike Maintenance	12	1223229.82	1000000.00	200000.00	23229.82
13	Faserachowk Dekhi Fasernichowk Baatokalopatre	13	2401126.95	2000000.00	400000.00	1126.95
14	Bisara Chowkdekhi Maheshkogharsamma Dhal Nirman	14	1157011.35	1000000.00	150000.00	7011.35
15	Hom Bahadur Chowkdekhi Hatti counter Samma Dhal Nirman	15	1152610.12	1000000.00	150000.00	2610.12
16	Naala Nirman Kailaash Koghardenkhi Hattikhamadisamma	16	1153449.98	1000000.00	150000.00	3449.98
17	Amrit Kulo Kharkhutte	17	1500840.57	1300000.00	195000.00	5840.57
18	Ward no 10 Kathaar dekhi Purbajane Baato Pitch	18	3963096.05	3300000.00	660000.00	3096.05

Table 3: Total Estimate Amount and Source of Fund for Selected Projects

SN	Project name	Project Code	Contract Amount (NRs)	Allocated by Municipality (NRs)	Contribution By UC (NRs)	
					Cash	Kind
19	Janakalyan Ka Shakhakulo Lining	19	1150637.69	1000000.00	150000.00	637.69
20	Kankali Saamudaaik Ban tarpha Paryataan Bikash	20	9978954.83	7608128.72	2240644.07	130182.04
21	Maganichowknajik Pampha Khola konadinyantran	21	2594502.80	2386943.38	207560.22	-0.80
22	Osho Camp Gate dekhi Jhuwanikulo samma Naala Nirman	22	1152105.42	1000000.00	150000.00	2105.42
23	Woda no 6 Khaira hanchau dharigaun Dhal Nirman	23	3335634.36	2900000.00	435000.00	634.36
24	Purano Rajmarga ko dubai tarfa dhal nirman	24	2534217.62	2200000.00	330000.00	4217.62
25	Ward no 7 majhui gaaun ko adhuro Dhal Nirman	25	1728362.35	1500000.00	225000.00	3362.35
26	Udhogbanijya sang Khairahani Sanga sahakarya	26	2800735.72	2419000.00	375000.00	6735.72
27	Nirbaachan kshatra bikas Karyakram Khairahani NP (parsa) Gumba Nirman	27	1735164.39	1500000.00	225000.00	10164.39
28	Shanti Mainaliko ghar dekhi Bhusal lamako ghar samma mozic tile	28	1215258.00	1008000.00	201600.00	5658.00
29	Surtanitharugaunmaa Dhal Nirman	29	1499878.85	1300000.00	195000.00	4878.85
30	Gopalshshkogharbaata pampa khola samma Dhal sahit Slab nirman	30	1612650.11	1400000.00	210000.00	2650.11
31	Khageshorikoghar dekhi Dakshin samm Nirantar Dhal Nirman	31	1152610.29	1000000.00	150000.00	2610.29
32	D a d a g a u n Khanepanichowkbaat Roshan siwakotiko ghar dekhi Uttar sayapatri tolsamma Kalopatre	32	3004327.04	2500000.00	500000.00	4327.04
33	Mukeshregmikoghar dekhi Dwarika pradhan ko ghar samma Mozic tile Lagaune	33	1213688.40	1008000.00	201600.00	4088.40

Based on selected projects, out of 33 projects, one project has only kind contribution, two projects has cash contribution and remaining in all 30 projects was found that the beneficiary's contributed both cash & labor in the projects implemented through UCs.

Table 4: Types of Contribution by UCs

Types of Contribution by UCs	Projects (Nos)
No	0
Cash Only	2
Kind Only	1
Both (Cash & Kind)	30
Other	0
Total	33

As per PPR (2064), Rules (97), Nature, quantity, cost estimate of the construction work or services, the amount that the users' committee will bear or has to bear, period for completion of the work or services.

It was found that it was difficult to contribute by all the beneficiaries in the project to meet the public contribution part. Contribution in any form (financial, labor, time etc.) is essential in the implementation of identified community projects, to increase ownership, accountability, and sustainability.

Supervision and Monitoring the Project

The projects under the implementation of the UCs were monitored by the different supervision and monitoring committees. The supervision and monitoring were conducted by the concerned authority as well as district level committee.

a. Site Visits/Supervision by the Technicians

Based on the responses provided by UCs, regarding site visits the response shows that in all project's technicians visit the site only when the problem is occurred at the site. And the major events of site visit by technician were:

- At the time of site survey & Cost estimation
- At the time of project layout & implementation

- At the time of work progress Measurement & Evaluation
- At the time of other major construction events

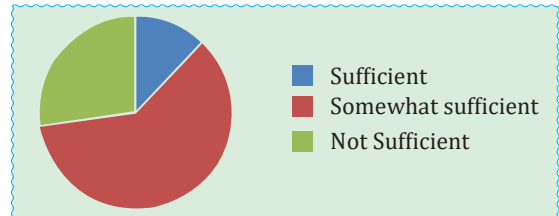


Figure 3: Sufficiency in Technicians Site supervision

As per the responses provided by UCs (Annex-1), regarding the sufficiency in site visits by municipal engineers/technicians, 12.12 % of response showed that the site supervision was sufficient, 61.61 % of response showed that the site supervision was somewhat sufficient and 27.27 % of response showed that the site supervision was not sufficient.

(b) Site Visits by the ward level Monitoring and Facilitating Committee

As per the responses provided by UCs, regarding the sufficiency in site visits by the monitoring and facilitating committee formed at the time of UCs formation conduct the supervision and monitoring of the projects as per need and then forward for the final payment. And 100 % of response showed that the site supervision was not sufficient.

(c) Site Visits by the municipal level Monitoring & Evaluation Committee

As per the responses provided by UCs, regarding the sufficiency in site visits by the municipal level Monitoring & Evaluation Committee conduct the supervision and monitoring of the projects before the final payment and then forward for the final payment. And 100 % of response showed that the site supervision was not sufficient.

As per PPR (2064), Rules (97), Sub-rule (3) (b) Matter that the public entity shall carry out the work of preparing and approving the design and cost estimate of the concerned work, providing technical advice, carrying out measurement, final acceptance and providing other necessary technical assistance, supervision and quality control. Similarly as per PO&M(2075), the Municipal Level Monitoring Committee was responsible for monitoring the projects at the end of the fiscal year after the completion of project with the involvement of all public, staffs and media.

There is not any checklist used by the technicians for the supervision of works. The frequent visits to the sites by the technicians are essentials for the regular Supervision and monitoring of the projects. But in the Municipality, a large number of small projects had to be supervised and monitored by few nos. of technicians. Though there are monitoring and evaluation formats of Nepal Planning Commission, these are not used by the supervision and monitoring committee.

Time

Based on the responses provided by respondent regarding Sufficiency in work completion time mentioned in contract agreement, 48 % of response showed that the project completion time was sufficient and 52 % of response showed that the project completion time was not sufficient.

Based on the project checklist survey regarding the Sufficiency in work completion time mentioned in contract agreement, out of 33 construction project it was found that 27 project were completed in stipulated time in contract agreement and 6 projects were not completed in in stipulated time in contract agreement and needed time extension.

As per the responses provided by respondent regarding cause of in sufficiency in work completion time mentioned in contract agreement, 27% of response showed the technical reason delayed in project completion

time, 45 % of response showed the social reason delayed in project completion time and 27 % of response showed the environmental reason delayed in project completion time.

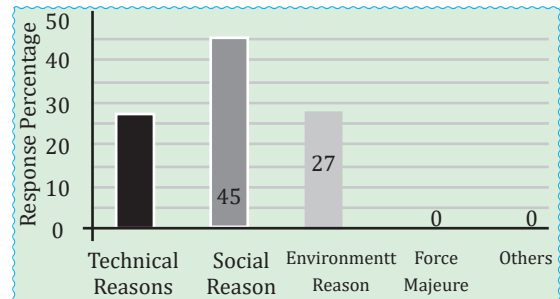


Figure 4: Causes of project time extension

The objective of work carried out by the UCs is that there shall be no social issues arises during project implementation but it has been found that the projects through UCs have also been delayed due to the social issues. With reference to 2 and 3, the work distribution within the UCs and the regular meeting of UCs are essential to expedite the work.

Cost

Based on the selected projects, out of 33 projects, 6 projects Completed in Contract Cost. Similarly,14 projects were complete in cost less than Contract Cost and 13 projects costs more than Contract Cost. And the payment was made in the same ratio by the amount to be borne by the Municipality accordingly. But it was found that the UCs had been submitted the bills and receipts of the project expenses more than the total bill amount evaluated by the technicians.

Table 5: Types of Contribution by UCs

Project Completion Cost	Project (Nos)
Completed in Contract Cost	6
Completed in Less than Contract Cost	14
Completed in more than Contract Cost	13
Total	33

As per the PPA 2063 (BS) & PPR 2064 (BS), the UCs would receive the amount in the same ration by the amount to be supported by the Municipality accordingly in the projects completed with lesser cost and the payment would be the same amount as per agreement even if the project cost exceeds the estimated cost.

As per the “Procedure regarding Formation, operation and management of User’s committee of Khairhani Municipality – 2075”, the technicians have to clearly indicate the contribution of public participation as well. The estimate prepared by the technicians for UCs without the value added tax (VAT) and overhead. The VAT will be given to UCs to the materials purchased at market with VAT.

Quality

As per PPR (2064), Rules (97), Sub-rule (3) (b)- Matter that the public entity shall carry out the work of preparing and approving the design and cost estimate of the concerned work, providing technical advice, carrying out measurement, final acceptance and providing other necessary technical assistance, supervision and quality control.

And as per the Procedure regarding formation, operation and management of user’s committee of Khairhani Municipality – 2075, Paragraph (3), Rule (11) – Quality Control Responsibility of Municipality:

By law (9) - The responsibility of maintaining the quality of the projects to be constructed by the User’s Committee shall be the responsibility of the people’s representative, concerned technical staff, User’s committee and monitoring committee.

After the study of projects, it was found that none of the project was executed after preparing proper quality assurance checklist and there was not any quality assurance plan attached & provision of Quality check.

The quality of the construction project is one of the measurement criteria for project performance.

Proper assurance plan and their execution method should be prepared and checked in all phase of construction. The work distribution within the UCs and the regular meeting of UCs should be encouraging to enhance the quality of work. The quality of work shall be ensured by the work distribution and regular meeting of UCs. It is similar to Mishra, 2020.

Quality Control of the Construction Materials

As per the Procedure regarding formation, operation and management of user’s committee of Khairhani Municipality – 2075, Paragraph (3), Rule (12) (A) - Quality of construction materials: The quality of construction materials as per drawing, design and specification shall be maintained.

Based on the responses (Annex – 1) provided by respondent regarding whether or not there is information about the quality of materials used in project construction, none of the respondent has complete knowledge about the construction material quality but 80% of the respondent has somewhat knowledge and 20% of the respondent has no any knowledge about the construction material quality.

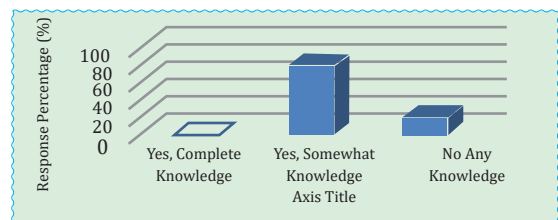


Figure 5: Knowledge about the quality of Construction materials

As per the responses provided by respondent regarding the selection technique of quality of materials used in project construction to the respondent, 29% of the respondent has selected by purchasing quality marked materials only (NS, ISI, ISO etc.) and remaining 71% of the respondent were selected the quality construction material by asking expert.

Table 6: Technique used to select quality material by Respondent

Technique used to select quality material by Respondent	Response Percentage
By quality marks (NS, ISI, ISO etc.)	29
By lab test report	0
By asking expert	71
By purchasing popular brand	0
Total	100

Based on the project checklist survey regarding the detail quality specification of the material used in construction project, there is no any detail material quality specification attached in contract agreement and also no any material test report was attached.

But it is also found that all the respondent were referred to municipal engineer / Technician as an expert to select the quality of materials used in project construction.

As per PPR (2064), Rules (97), Sub-rule (3) (b) - Matter that the public entity shall carry out the work of preparing and approving the design and cost estimate of the concerned work, providing technical advice, carrying out measurement, final acceptance and providing other necessary technical assistance, supervision and quality control.

So, It was found that the materials used for the construction projects are controlled by the UCs and concerned technicians. The local construction materials were used to save money. The technicians permit the local construction materials from the approved district quarry site or by eye judgment or by visual examination or by the identification of suitable materials. The technicians made the UCs to purchase the foreign materials like cement, steels, HDP pipes etc. as per the required specification by the trade mark standard and manufacture date.

Quality Control for Construction Process

As per the responses provided by respondent regarding whether or not there is information

about the quality of construction work/ Procedure in project construction, none of the respondent has complete knowledge about the construction work/Procedure quality but 80 % of the respondent has somewhat knowledge and 20 % of the respondent has no any knowledge about the construction work/Procedure quality.

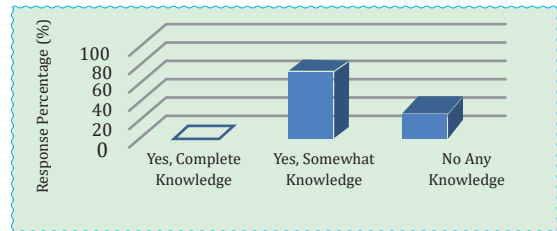


Figure 6: Knowledge about the quality of Construction work/Procedure

Based on the project checklist survey regarding the detail construction quality specification, there is no any detail construction quality specification attached in contract agreement and also no any engineering test report was attached.

It is also found that all the respondent were referred to municipal engineer/Technician as an expert for information about the quality of construction work/Procedure used in project construction.

As per the PO&M(2075), Paragraph (3), Rule (12) (B) - Quality of construction method and process: The construction method and procedure should be done as per the agreement with the office.

It was found that the construction process was controlled by the concerned technicians' supervision, guiding the UCs at site. The equipment was used as per the standard norms. The process was also controlled by the monitoring and facilitating committee.

Quality Control of Human Resources and Equipment

As per PO&M(2075), Paragraph (3), Rule (12) (D) The responsibility of maintaining the prescribed quality of work to be done through the User's Committee shall be the technical staff

assigned by the office and the User's Committee.

It was found that the human resources retained by the performance of the skilled persons watched by the technicians/UCs and judged through the workmanship of skilled and unskilled persons. If the labors failed to deliver the satisfactory work was rejected.

Engineering Laboratory

After the visit of Municipality office, it was found that the engineering lab had not been established in Municipality and there was not any provision for lab test conducted in the projects implementing through UCs.

Measurement of the Work

Based on the responses provided by respondent, regarding measurement of work, it is found that, the measurement of the work in the projects was executed by the technicians with some of the UCs members' participation. Thus, it was found that, the work progress measurement of 29 projects was executed by municipal engineer / technician and work progress measurement of 4 projects was executed by engineer / technician appointed by donor agency.

Based on the responses provided by respondent, regarding times & purpose of the measurement of work, Work progress was measured only once for the purpose of final payment of 29 projects and work progress was measured twice for the purpose of interim payment and final payment of 4 projects.

Based on the project checklist survey regarding the, Work progress measurement attached in the project documentation, it was found that, in 29 projects, only the final payment certificate and in 4 projects, interim payment as well as final payment certificate of reports were attached.

As per PPR (2064), Rules (97), Sub-rule (11)-After completing the construction work, the users' committee or beneficiary community shall cause such work to be finally examined and accepted by a technical employee deputed by the concerned public entity and submit to that entity

the statements of the total expenditure including the money received from such an entity and the cost of labor, cash or goods-in-kind provided or borne through public participation. The concerned public entity shall prepare a work completion report setting out, inter alia, the statements so received and the survey, design, cost estimate, supervision of the construction work and name and post of the person and official having performed the work and keep the records thereof.

The work completed by the UCs measured by the concerned technicians with all the UCs members shows the transparency among the UCs members since the UCs is a team and all the members are responsible about the quantity and quality of work done.

Project Book Keeping/Instruction Sheet

As per PPR (2064), Rules (97), Sub-rule (11)- After completing the construction work, the users' committee or beneficiary community shall cause such work to be finally examined and accepted by a technical employee deputed by the concerned public entity and submit to that entity the statements of the total expenditure including the money received from such an entity and the cost of labor, cash or goods-in-kind provided or borne through public participation. The concerned public entity shall prepare a work completion report setting out, inter alia, the statements so received and the survey, design, cost estimate, supervision of the construction work and name and post of the person and official having performed the work and keep the records thereof.

And as per the Procedure regarding formation, operation and management of user's committee of Khairhahi Municipality – 2075, Paragraph (3), Rule (12) – Quality Control:

To ensure the quality of construction work: It will be the duty of the concerned User's committee to ensure the quality of the project to be operated by the User's committee. In order to ensure quality, in addition to other things, the

following issues should be fully followed.

Rule (12) (E) - To keep record: If the work to be done by the User's committee cannot be completed in time, cost and quality as per the agreement, the concerned technical staff may be alerted and action may be taken as per the need. Keeping the information of such User's committee, the officials of the User's committee will be prohibited to work in other User's committees for a certain period of time.

Based on the responses provided by UCs regarding the project book keeping, it was found that none of UCs maintained the project book keeping at site.

Based on the selected projects, out of 33 projects, there was not any book keeping maintained in any projects project at site.

As per PPR (2064), Rules (97), Rule (12) (E)-the work to be done by the User's committee cannot be completed in time, cost and quality as per the agreement, the concerned technical staff may be alerted and action may be taken as per the need. Keeping the information of such User's committee, the officials of the User's committee will be prohibited to work in other User's committees for a certain period of time.

The study revealed that there was no any record and book keeping in site. All the input and output in works was not of concern and user need only result of work. This was the reason for insufficient data when required in future.

Safety

Based on the responses provided by UCs regarding construction site safety, respondents of all the 66 projects were found to have general knowledge about the construction safety but none of the projects had any provision of safety fund, first aid kits, safety measures, insurance etc. And as per the respondent, because of the lagging of the safety fund in the project cost estimate, there was no provision of construction safety.

Based on the selected projects, the contract

agreement does not contain information regarding the provision of safety fund, safety measures, and insurance etc.

As per PPR (2064), Rules (97), Sub-rule (9) (2) While preparing the cost estimate, the public entity shall prepare separate items for costs pertaining to mobilization and demobilization, insurance, facilities to be provided to the consultant, quality testing, occupational health and safety, as built drawing, commission for the performance security, including the bid security¹³ or performance security, and include them in the cost estimate.

The study revealed that there was no any provision of safety at site. In implementing the project, the safety and health of the workers should be ensured. An important issue is workers' compensation for work accidents, where the costs of treating work related accidents should be covered in some way.

Insurance

As per PPR (2064), Rules (112), Insurance to be made: Sub-rule (1) - Except as otherwise provided in the procurement contract, a construction entrepreneur executing a construction work the price of which exceeds one million rupees shall insure the work as given following matters:

Full replacement costs of the construction work including construction materials, machine, equipment or plant to be used.

Sub-rule (3) - Except as otherwise provided for in the procurement contract, the construction entrepreneur shall bear the claims for compensation for the following loss and damage caused from the execution of construction work or correction of any defect underlying therein or resulted from such work and the costs and charges incurred in the institution of action relating to such claims:

- (a) If any person suffers injury or dies or,
- (b) Loss and damage caused to any property except the construction work in the course of work operation and completion.

Based on the responses provided by the UCs,

regarding the insurance of workers, it was found that neither project nor workers were insured.

As per PPR (2064), Rules (112), Insurance to be made: Sub-rule (1) - Except as otherwise provided in the procurement contract, a construction entrepreneur executing a construction work the price of which exceeds one million rupees shall insure the work as given.

It was found that in all projects there was no any provision of insurance and funding too. There should be the provision of insurance and funding in the projects implementing through UCs since the UCs implementing projects are mostly labour based and UCs do not have sufficient fund for workers' compensation for work accidents.

Safety Gears

Based on the selected projects , out of 33 projects, in none of projects safety gears were used at construction site.

The safety gears (safety belts, hard hat, gloves, glasses, mask etc.) are used by the workers during the construction at site with hanging works. Similarly, the cost of the safety gears was not included in estimate of project. Site supervisors made the workers to use safety gears compulsorily.

The safety gears should be used in the construction projects by the workers even in small scale projects because it may reduce the risk of accidents.

First Aid Kit

Based on the responses provided by UCs, regarding First Aid Kit, it was found that in all of the projects, there was not any arrangement of first Aid kit at site.

Provision of first aid/medical facilities shall be made along with commencement of work to provide quick medical service to injured/sick work person. The workers should inform and aware regarding the use of the first aid/medical facilities.

As per (Mishra & Shrestha, 2017) Safe drinking water and safety signs are the most important health and safety facility that need to be provided on site to the casual workers. From survey and site inspection it was found that none of workers in all projects were serious on safety factors.

Communication

As per the responses, provided by UCs communicate about the problems during the construction&project implementation, it is found that, all 66 respondent needed communication in similar issues and followingwere the issues that needed "communication" to be addressed are:

Table 7: Events to Need Communication

Events to Communicate	Response	
	Number	Percentage
To call the UC Meeting	66	100
To Communication with municipal engineer	66	100
To Communication with suppliers & Contractor	66	100
To update work progress	0	100
To coordinate with Municipal officials & representative	66	100

As per the responses provided by UCs about the means of communication during the construction& project implementation, it is found that, all 100% respondent using the similar means of communications i.e., Telecommunication & Letter exchange. And also it is found that, all 100% respondent feels both the means were effective means of communications.

Based on the project checklist survey regarding the provision of the communication cost in project cost estimate & provision mentioned in contract agreement, out of 33 construction project, none of the project were found the provision of the communication cost in project cost estimate & provision mentioned in contract agreement.

Transparency

The performance of the project implementing through UCs had to govern the factor transparency.

a) Information Board

Based on the project checklist survey regarding the provision of the project information board in the project site, out of 33 construction project, all of the project were found the provision of the of the project information board in the project site and cost of the project information board was added in project cost estimate & provision was mentioned in contract agreement.

b) Public Audit

Based on the project checklist survey regarding the provision of the public audit after completion of construction, out of 33 construction project, all of the project were found to be conducted public audit in the project site and no any cost of the public audit was added in project cost estimate but there was the provision of public audit mentioned in contract agreement.

As per PPR (2064), Rules (97), Sub-rule (7) - The users' committee or beneficiary community shall post a notice in the public place of the expenditure made by it in each installment, and have social audit of the acts and actions performed by it within such period and in accordance with such process as specified by the Public Procurement Monitoring Office.

Public auditing is done by organizing mass meetings, using hoarding boards and all financial details to be disseminated to ensure the public's right to information. Public audit is an approach that promotes transparency and accountability in development work. Public audit ensures quality of work. Public audit enhances the responsibility and ownership of local people to development projects.

c) Expense discloser notice

As per PPR (2064), Rules (97), Sub-rule (7) - The users' committee or beneficiary community shall post a notice in the public place of the expenditure made by it in each instalment, and have social audit of the acts and actions performed by it within such period and in accordance with such process as specified by the Public Procurement Monitoring Office.

Based on the project checklist survey regarding the provision of the Expense discloser notice after completion of construction, out of 33 construction project, all of the project were found to be attached expense discloser notice in the project file and no any cost for the expense discloser meeting was added in project cost estimate but there was the provision of expense discloser notice mentioned in contract agreement.

Project Completion Report

As per the project checklist survey regarding the Project Completion Report of the completed construction projects had been prepared by the technicians but the project completion report mentioning the completed activities.

As per PPR (2064), Rules (97), Sub-rule (11)-After completing the construction work, The concerned public entity shall prepare a work completion report setting out, inter alia, the statements so received and the survey, design, cost estimate, supervision of the construction work and name and post of the person and official having performed the work and keep the records thereof.

But problems and solution and other details had not been prepared in the report. In the Municipality, most of the projects implementing through UCs are annual projects and very few multiyear projects. Hence, work completion report had been prepared for the clearance of the project.

Examination and Clearance

As per the project checklist survey (Annex-3) regarding the project level monitoring evaluation, out of 33 projects, it was found that only 3 project has attached the separate monitoring evaluation report of all remaining 30 projects attached only the copy of meeting minute as monitoring evaluation report to meet the criteria of examination & clearance of the project. But it was found that a brief monitoring evaluation report of all 33 projects prepared by municipal level monitoring evaluation committee and the Work Completion report of all 33 projects prepared by municipal engineer / technicians were attached for the Examination and Clearance of the project.

And all the selected projects had been examined and cleared within 30 days after receiving the work completion report

Based on the Public procurement rules 2064, upon the completion of the project and receiving the reports shall have to be approved and cleared by the concerned body within one month from the date of receipt of such reports.

Level of Satisfaction

It was found that the overall satisfaction of the project performance was as per expected by the UCs but from the Informal Consultations, it was found that the level of satisfaction is not as per expectation since the work by the UCs hardly meet the specification and the work is uncared for O & M.

Familiarity with Construction Approach

Table 16 shows the comparison of response in favor/against of UC and contract approach on basis of Technological practice and Environmental issues.

Table 8: Comparison of response in Technological practice and Environmental issues

Technological practice and Environmental issues	Percentage choice of Users Committee Approach	Percentage choice of Contractor Approach
Peoples are more aware about estimated time, cost, specification, rules and regulation in	21.21	78.79
Locally available tools and equipment is used more in	75.76	24.24
Locally available technology and skill is used more in	84.85	15.15
People get more skill training in	21.21	78.79
Indigenous technology is preserved more in	75.76	24.24
Quality is achieved more in	12.12	87.88
Design and specification are more changed during work in	78.79	21.21
Environment degradation is more in	27.27	72.73
Pollution is more produced in	15.15	84.85
Rate of disaster event is more in	21.21	78.79

This comparative table of technological practice and environmental issues suggest that both UC and contract approach are equally responsible in the sense of parameters (variables) taken under consideration. Contract approach is favored in the case of awareness about estimated time, cost,

specification, rules and regulation, skill training to the workers, quality achievement point of view. Other than these issues, UC approach is more favored. Overall contractor approach was more prominent in technological practice and environmental issues.

Table 9: Comparison of Response User Committee and Contract Approach

Safety health issues and their management issues	Percentage choice of Users Committee Approach	Percentage choice of Contractor Approach
Adverse effect by use of machine	15.15	84.85
Rate of accident is more in	24.24	75.76
People are more injured in	69.70	30.30
People are more deceased in	9.09	90.91
Peoples are more careless about safety and health in	93.94	6.06
Safety procedure is adopted more in	33.33	66.67
Safety accessories are more managed in	42.42	57.58
Safety training is more provided in	48.48	51.52
Health facility is provided more in	30.30	69.70
Disturbance and danger from quarry operation are more in	12.12	87.88
Rate of disaster event is more in	21.21	78.79
Loss of disaster is more in	24.24	75.76
Disaster prevention provision are maintained more well in	57.58	42.42
Risk management is easier in	30.30	69.70

This comparative study of safety and health issues and their management taken under consideration results that both the approaches have own merit and demerit with respect to parameters compared. However, contractor approach was found more preferred.

CONCLUSION

Overall performance of project executing by UCs were satisfactory. The projects through UCs have been completed within the budget. There is not time control mechanism in the projects since work schedule was not prepared and followed. Most of projects were completed on time of one year and all projects were completed within estimated cost. Due to less managerial and technical skill of UCs, inadequate supervision by the technicians, unavailability of skill persons at local levels and with no laboratory provision in the projects implementing through UCs, the quality of construction work could not be assured

as QAP was not in use. For the transparency, the project information board is displayed at sites in the projects budgeting equal to or greater than 10 lakhs. Public Audits are also conducted in all the projects. The projects after the work completion have been examined and cleared within 30 days after completion.

Recommendation for UC Approach

Despite numerous benefits, lacking of public contribution part, less quality work, corruption promotion, political interferences, delay of work, less care about design, drawing and estimate, health and safety precautions, lack of skill, deficiency in training and experience, lack of reward and punishment, increased profit making motive and practice of quasi contract are major problems in UC approach which should be corrected and proper solution like awareness through training, punishment and

reward provision on agreement and appropriate amendment on rules and regulation needs to be developed. Agreement in time and timely payment for UC is essential.

Adverse effect like rate of accident, injury level and death level, disturbance and danger from quarry operation, rate of disaster and violation of rules are found more in UC approach which should be minimized through proper management of resource and facilities in rural road construction.

Similarly, work done might have been denied or agreement also have been terminated with no respect to rule and regulation in this approach. UCs normally haven't get advance, so it was difficult to initiate work. However necessary mechanisms should be developed to control the misuse of the advance money. UCs are not mandatorily liable to maintenance work after construction agreement terminates. So legal binding provision is essential to control this type of shortage.

RECOMMENDATION

Recommendation for Improvement of Contract Approach

Collusion, intimidation, hidden and unauthorized sub-contracting, extension of time, low public responsibility, spoil material management problems, environmental degradation and increased pollution are major problems found in work carried out by contract approach in this study. So' such type of defaults needs be controlled with proper provision regarding to contract act, procurement act and other corresponding legislative provision.

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References

[1] Agrawal, G. R. (2013). Project Management in Nepal. M.K. Publishers and Distributors. (n.d.). Retrieved from analysisproject.blogspot.com/2012/08/historical-overview-of-project.html.

- [2] Ali, A., Rahmat, I. The performance measurement [1] of construction projects managed by ISO-certified contractors in Malaysia's Retail Leisure Property 9, 25-35 (2010). <https://doi.org/10.1057/rlp.2009.20>
- [3] Azlan S Ali & Ismail Rahmat (2010), Journal of Retail & Leisure Property volume 9, pages25-35
- [4] Bhusal, T. (2017, May 22). Participedia. Retrieved September 2017, from participedia.net/en/cases/participatory-planning-nepal.
- [5] Bititci U S, 1994, Measuring Your Way to Profit, Management Decision, July 1994.
- [6] C.R. Kothari & Gaurav Garg (2019), Research Methodology: Methods and Techniques, New Age International Publishers, New Delhi.
- [7] Care Nepal. (2010-2014). Community Support Programme. Care Nepal.
- [8] Chan, A.P.C. and Tam, C.M. (2000) Factors affecting the quality of building projects in Hong Kong. International Journal of Quality & Reliability Management 17 (4/5): 423-441.
- [9] Chan, A.P.C., Scott, D. and Lam, E.W.M. (2002) Framework of success criteria for design/build projects. Journal of Management in Engineering 18 (3): 120-128.
- [10] Charles, T.J. and Andrew, M.A. (1990) Predictors of cost-overrun rates. Journal of Construction Engineering and Management, ASCE, 116, 548-552. Takim, R., & Adnan, H. (2008). Analysis of Effectiveness Measures of Construction. Asian Social Science, 4 (7), 74-91.
- [11] Cooke-Davies, T. (2002) The "Real" Success Factors on Projects. International Journal of Project Management, 20, 185-190. [https://doi.org/10.1016/S0263-7863\(01\)00067-9](https://doi.org/10.1016/S0263-7863(01)00067-9)

- [12] Devkota, K. L. (2009). A Brief Overview of Minimum Conditions and Performance Measures (MCPMs) of Local Bodies of Nepal. Kathmandu: Local Governance and Community Development Programme (LGCDP), MoLD.
- [13] Dhungel, D. N., Sapkota, M. R., Huag, M., & Regmi, P. P. (2011). Decentralization in Nepal: Laws and Practices. Norwegian Institute for Urban and Regional Research. Norwegian Institute for Urban and Regional Research.
- [14] GoN. (2004). Financial Administration Regulation (FAR) 2004
- [15] GoN.(1998). Drinking Water Rules. Kathmandu: Government of Nepal.
- [16] GoN.(2007). Public Procurement Act. Kathmandu: Government of Nepal.
- [17] GoN.(2007). Public Procurement Rules. Kathmandu: Government of Nepal.
- [18] International Labour Office in Nepal. (2005). Decent Civil Works in Nepal: From Research to Action Planning. Kathmandu: International Labour Office in Nepal.
- [19] International Labour Organization.(2009). Community Infrastructure Development in Urban Areas- Implementation Guide for Nepal. Kathmandu: ILO Office for Nepal Employment Intensive Investment Programme (EIIP).
- [20] Koirala, R., Mishra, A. K., & Aithal, P. S., (2022). Analysis of Contractual Process of Users Committees: A Case of Khairahani Municipality, Chitwan, Nepal. International Journal of Management, Technology, and Social Sciences (IJMTS), 7(2), 572-595. <https://doi.org/10.5281/zenodo.7308334>
- [21] Liu, A.M.M. and Walker, A. (1998) Evaluation of Project Outcomes. Construction Management and Economics, 16, 209-219. <http://dx.doi.org/10.1080/014461998372493>
- [22] Lohani, A. (2012). Assessment of existing working methodology and their standardization for community Led constructions (CLC). M.Sc. Nepal Engineering College-Center for Postgraduate Studies (nec-CPS), Pokhara University.
- [23] Max Wideman, R., & Eng, P. (2001). Project Management Appraisal. Project Management for Developing Countries. AEW Services, Vancouver, BC.
- [24] Ministry of Foreign Affairs of Denmark. (n.d.). Evaluation Guidelines. Retrieved september 2017.
- [25] Ministry of Irrigation.(2000). Irrigation Rules. Kathmandu: Government of Nepal.
- [26] Ministry of Irrigation.(2012). Construction Work Implementation through Users Association Guidelines. Kathmandu: Ministry of Irrigation.
- [27] Ministry of Local Development.(2010). Local Body Public Audit Guidelines. Kathmandu: Ministry of Local Development.
- [28] Ministry of Water Resource.(1992). Water Resource Act. Kathmandu: Government of Nepal.
- [29] Mishra A. K., Magar B. R. (2017). Implement ability of municipal transport master plan of Bandipur Inner Ring Road, Tanahun, Nepal. International Journal of Scientific & Technology Research, 6(8), 306-313.
- [30] Mishra A. K., Magar BR. (2017). Opportunities and challenges of labor based participatory approach in road construction in Nepal: a case study of district road support program funded road projects, Ramechhap, Nepal. International Journal of Computer & Mathematical Sciences, 6(10), 1-6. <https://doi.org/10.5281/zenodo.7237700>.

- [31] Mishra AK. Empirical assessment of user's committee's formation and contractual process for project implementation. *International Journal of Interdisciplinary Research in Arts and Humanities* 2020; 5(1): 1-8.
- [32] Mishra, A. K. (2022). Evaluate the Farmers' Participation for Irrigation Development in Nepal. *International Social Mentality and Researcher Thinkers Journal*, 8(57), 630-644.
- [33] Mishra, A. K., & Aithal, P. S., (2022). Performance Assessment of Irrigation: A Case from Nepal-Asia. *International Journal of Management, Technology, and Social Sciences (IJMTS)*, 7(1), 444-464. DOI: <https://doi.org/10.5281/zenodo.6657541>.
- [34] Mishra, A. K., & Aithal, P. S., (2022). Planning Assessment of Transport System: A Case from Nepal. *International Journal of Applied Engineering and Management Letters (IJAEML)*, 6(1), 280-300. DOI: <https://doi.org/10.5281/zenodo.6577822>.
- [35] Mishra, A. K., & Shrestha, M. (2017). Health and Safety Status of Casual Workers in Road Improvement Project Kathmandu Valley, Nepal. *International Journal of Engineering Technology Science and Research (IJETSR)*, 4 (9), 1187-1199.
- [36] Mishra, A. K., Koirala, R., & Aithal, P. S. (2022). Effectiveness of the Construction Projects: A Comparison between Users Committees and Contractor Approach. *International Journal of Case Studies in Business, IT, and Education (IJCSBE)*, 6(2), 435-445. <https://doi.org/10.5281/zenodo.7235968>.
- [37] MoFALD. (2013). *Strengthening the Accountability of Local Government (SALG)*. Kathmandu: SALG Project.
- [39] MoFALD.(1998). *Local Self Governance Act*. Kathmandu: GoN.
- [40] MoFALD.(1999). *Local Self Governance Rules*. Kathmandu: GoN.
- [41] MoFALD.(2007). *Local Body Financial Administration Rules*. Kathmandu: GoN.
- [42] MoFALD.(2007). *Minimum Condition and Performance Measures Guidelines*. Kathmandu: Ministry of Federal Affairs and Local Development.
- [43] MoFALD.(2012). *Local Body Resource Mobilization and Management Guidelines*. Kathmandu: Ministry of Federal Affairs and Local Development.
- [44] MoLD.(2010). *DDC Grant Operation Guidelines*. Kathmandu: Ministry of Local Development.
- [45] MoLD.(2010). *Local Body Directives-38 points*. Ministry of Local Development.
- [46] MoLD.(2012). *Public Expenditure & Financial Accountability and Fiduciary Risk Reduction Action Plan*. Kathmandu: Ministry of Local Development.
- [47] National Planning Commission Secretariat. (2013). *National Monitoring and Evaluation Guidelines*. Kathmandu: National Planning Commission Secretariat.
- [48] Pinto, J. K. and Slevin D. P. (1988). "Critical success factors in effective project implementation." *Project management handbook*, D.I. Cleland and W. R. King, eds, Van Nostrand Reinhold, New York, 479-512.
- [49] Pinto, J. K. and Slevin D. P. (1989). "Critical success factors in R&D projects". *Research Technology Management*, 32(1), 31-35.
- [50] Pokharel, S. (2013). *The 14 Step Planning Process of Local Level*. Kathmandu: GIZ. (Source: Direction on formulation of annual plan and budget at local level, 2074)
- [51] Rijal, M. (n.d.). *The Rising Nepal*. Retrieved September 2017, from <http://therisingnepal.org.np/news/8378>.
- [52] *Rural Reconstruction Nepal (RRN)*. (2014). *Illustrative Practices for Managing Community Development Program*. RRN. Kathmandu: Rural Reconstruction Nepal.

- [53] SCRIBD.(n.d.).
<https://www.scribd.com/doc/17884376/Fundamentals-of-Project-Management>.
- [54] Strengthening Monitoring and Evaluation System (SMES) Project.(2009). SMES Monitoring and Evaluation Training Manual. Kathmandu: Strengthening Monitoring and Evaluation System (SMES) Project.
- [55] Takim, R., & Akintoye, A. (2-4 September 2002,). Performance indicators for successful construction project. 18th Annual ARCOM Conference, 2, pp. 545-55. University of Northumbria. Association of Researchers in Construction Management,
- [56] Timsina, N., & Sharma, S. (2014). Beneficiaries Monitoring Practices In Community Support Programme (CSP II). CARE-Nepal and Rural Reconstruction Nepal (RRN).
- [57] Tiwari, K. R., Bajracharya, R. M., & Sitaula, B. K. (2008). Natural Resource and Watershed Management in South Asia: A Comparative Evaluation with Special References to Nepal. The Journal of Agriculture and Environment, 9, 72-89.
- [58] Torbica, Željko & Stroh, Robert.(2001). Customer Satisfaction in Home Building. Journal of Construction Engineering and Management-asce - J CONSTR ENG MANAGE-ASCE. 127.10.1061/(ASCE)0733-9364(2001)127:1(82).
- [59] UNDP, Economic Analysis of Local Government Investment in Rural Roads in Nepal 2011
- [60] World Vision Advocacy Forum (WVAF) Nepal. (2012). Community Based Monitoring of Local Government/Public Goods and Services. Hetauda: Local Governance and Accountability Facility, (LGAF).

