Acquiescence to acceptance: community acceptance testing in water supply and sanitation

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Abstract

This paper deals with the concept of ‘community acceptance testing (CAT)’ which is perhaps a new concept in the water supply sector. To understand this it is necessary to accept the water supply system as a product of engineering works and water as social goods. While the engineering approach verifies the product against predefined specifications, the CAT validates the capability of that product to satisfy user expectations. In the water supply, sanitation and hygiene sector, there is a culture of verification, but validation should also be given due importance. The validation process is based on user stories and is done before handing over the project to the community. It establishes the community’s supremacy over system decision-making and service delivery. The CAT approach promotes the designing of community-engineered systems.

Key words: acceptance, WASH, community-engineered, expectation, validation, verification

BACKGROUND

Implementation

Ensuring access of all Nepalese to water and sanitation facilities remains a major challenge to the country’s Government. For years, various government and non-government organizations have been implementing water supply projects to make safe water available to all. Each has adopted its own project implementation modality and no single project intervention approach is acceptable to all. Despite this, Nepal’s water supply, sanitation and hygiene (WASH) sector has accepted and recognized these modalities as sectoral creativity. Although the organizations have different concepts, approaches, methodologies and resources for water supply projects, community participation has been recognized widely as the central philosophy. The scope of community involvement ranges from ‘community participation’ to ‘community management’. Basically, the former connotes numerical presence while latter denotes functional engagement. There can be several definitions of community management but there are four distinct features which truly portray the concept:

Participation: broad participation from all segments of the community is necessary for effective and successful implementation, as well as operation and maintenance (O&M) of the system. Community participation is needed from the start right through to O&M. As women are key players and drivers of change, their meaningful involvement is the essence of community management.

Access to decisions: this means not only the ability to make strategic decisions about the main aspects of their own water supply system but also the presence of a favorable environment for decisions.

Ownership: apart from formal and legal ownership, the perception of the community that they really own the system themselves is highly desirable.

Cost sharing: some contribution in cash or kind for O&M, and even for capital, extension and replacement of the system, is desirable. This, cost recovery and sharing, increases the sense of ownership and accountability within the community.
Management modalities

In Nepal, most water supply projects are constructed by the government. About 20–50% of the capital costs are shared by the communities themselves and completed projects are handed over to the communities. The Water Users and Sanitation Committee (WUSC), which is the community’s representative body, then assumes full responsibility for running and managing these projects. Apart from regular office administration and the O&M of the system, WUSC determines the tariff, generates and mobilizes resources, and standardizes and regulates service quality. In this sense, the WUSC itself plays multiple roles including those of consumer, owner, service provider and regulator. This is, indeed, the WUSC’s unique management feature.

Management failure

It is a well-established fact in the WASH sector that community involvement brings dramatic changes to effectiveness in governance and project sustainability. In Nepal, even though there is community participation in every stage of project cycles, WUSCs largely suffer from a number of interconnected institutional weaknesses. Almost all WUSC members, elected by the consumers and generally for 4 years, are non-technical people and volunteer social workers from the project area. With insufficient funding for O&M and limited knowledge of systems operation, they try to operate and maintain the system themselves, instead of hiring a manager, technical and other office staff. They do not know properly how the system functions, or the other managerial and financial aspects of system management, which leads to system failure. Although the present coverage of water supply services in Nepal is 83.59%, these weaknesses result in reduced water supply system functionality. The recent status survey reports of nearly 38,000 projects in Nepal, published by the National Management Information Project (NMIP) of the Department of Water Supply and Sewerage (DWSS), show that only 25.4% of the projects are fully functional.

<table>
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<tr>
<th>S.N.</th>
<th>Functional Status</th>
<th>Percentage</th>
<th>Remarks</th>
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<tbody>
<tr>
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<td>Fully Functional</td>
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<td></td>
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<tr>
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<td>5</td>
<td>Requiring Rehabilitation</td>
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<td>6</td>
<td>Dead Projects</td>
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(Source: Nationwide Coverage and Functionality Status of Water Supply Systems in Nepal, DWSS/NMIP, October 2014)

This figure has resulted in profound disappointment among both policymakers and implementers. It was not anticipated as ‘community management’ had been recognized as the key approach. The NMIP report revealed that the majority of communities cannot manage their projects for various reasons.

EMPATHY

Viewing things differently

To understand the failure of community managed projects, an outsider needs to look at the problems from the inside. Up to now a water supply system has been considered as an externally held project and this is, indeed, the implementer’s view. To look at the problems from the water supply users’ perspective (i.e. from the user’s side), the project must be viewed as a service delivery...
entity. When this is done, other prime factors arise naturally, like users’ expectation and satisfaction from the services rendered to them. The concept of ‘output delivery’ and ‘service delivery’ in the water supply sector is crucial, so it requires careful analysis and thorough understanding. The heart of output delivery is output quality, but the heart of service delivery is the acceptance of output by the users. Even if the output quality is ranked high by the implementers, this may not be accepted by the communities. It is the community’s perception of the output that is important rather than the actual output of the project interventions. The prime aim of the service delivery approach is to improve acceptance by users while the aims of other classical approaches relate to output improvement only.

Project taste

For project success, it is important to ensure the community’s confidence in and satisfaction with the engineering output, to know whether the project was built as expected by the users. In other words, the engineering outputs must match the community’s expectations. This expectation of comfort can be considered as representing their ‘taste’ for the project outcome. The failure rate of water supply projects in Nepal shows that the project output ‘taste’ has become ‘tasteless’, and so, it has not been favorable for or suitable to users.

Product view

It is important to ask what is in the users hands when the project is completed. Have they got a water supply system or an engineering works product? Naturally, it is described as a system that delivers services. After works completion and before service delivery starts, it can be considered a ‘product’, coming from engineering endeavor. For example, the product of a car-factory is a car; similarly the product of this engineering work is the water supply system delivering water to consumers. This product view of a water supply project is very important in addressing acceptance issues.

Test of project

The product view is important mainly to control the quality of the product. When a water supply system is viewed as a product of engineering works, its quality is judged using two main approaches: Verification: this addresses that aspect of the quality concept that defines material specifications and production method(s). The quality of the product is considered acceptable if its measurable characteristics satisfy a predefined specification, i.e. it conforms to specification (objective aspect). Validation: this addresses that aspect of the quality concept that is independent of any measurable characteristics, i.e. the product’s or service’s ability to meet customer expectations and need, whether explicit or not (subjective aspect).

‘Verification’ determines whether something has been built according to specifications, while ‘validation’ determines if it works as intended in the users’ environment and meets their needs. In water supply projects, the principal quality control view is ‘conformance to specification’, i.e. verification. This approach is dominant because, until now, water supply projects have been viewed merely as implementations of their blueprint, which has been prepared somewhere else and does not necessarily reflect the community’s indigenous contexts. It does not contain the community’s perceptions, either. If the project is completed to specification and in accordance with the blueprint, it is considered to be of good quality. This is simply the verification of the quality of the project’s hardware component, but lacks the other quality component, which is water supply validation.
Whose responsibilities?

In Nepal, water supply systems are implemented, adopting the concept of community participation in every stage of the project cycle. Before handing over the completed project to the community, it is essential to carry out both verification and validation tests. It is likely that communities may not have adequate and appropriate knowledge or experience of verification testing, because it involves many complex engineering principles. As a result, the implementing agency needs to do the verification, although they may not know what the community expects from the project. The community will have to conduct the validation testing itself, therefore, to ascertain whether their expectations are met. This validation will determine whether the project has yielded a favorable ‘taste’ and, thus, whether it is acceptable.

WHY CAT?

Water supply projects are custom-built for the community, and so should be tested by them. This process, ‘community acceptance testing’ (CAT), can be defined as combining several interconnected aspects:

Community: community, in water supply system terms, means the real service users, who will have to own, standardize, operate and maintain the system.

Acceptance: acceptance of a system means that the community is comfortable with it.

Testing: it is impossible to prove that any system is correct. Therefore, in another way, a good test is always an attempt to make it fail, to expose errors before it goes into operation.

Objectives

The objectives of CAT are to:

(a) assess whether the system can sustain day-to-day operations and
(b) ensure that it is sufficient and true for the usage.

The WASH sector in Nepal has extensive examples and experience showing that completed water supply projects did not work as expected. A system that fails to work can have a significant impact on an organization, leading to problems like deteriorating financial health, loss of time, and damage to business credit and institutional reputation.

If the community is given the opportunity to test the project beforehand, it will become a matter of pride for them that they are real users of the system, that they test it for themselves, and that their test result has final reasoning in the project. CAT is also important because:

(a) It is the last chance to find defects before going into operation, so it inhibits premature hand-over.
(b) It determines system readiness, ensuring that the system behaves exactly as expected by the community.
(c) It minimizes future maintenance costs.
(d) It is the only test based on user ‘stories’

In addition to other tangible benefits, there are also important intangible benefits that CAT can bring in a community:

(a) Feeling of benefit: the community perceive that their system is beneficial to them.
(b) Feeling of association: community members perceive that they are members of a just and equitable community, and that there is no disparity among them in sharing the benefit generated by the water supply system.
(c) Belief in self: the community will have increased self-belief, i.e. that it will succeed and can withstand against the odds.
ACCEPTANCE CRITERIA

The acceptance criteria for CAT must be related to users' expectations. Only the community consume the benefit that the system produces, so, naturally, they are the only entity who test the system as an end user. Thus the criteria should be based on users' stories, not on the implementer's preconceived notions and predefined indicators.

The followings are some examples of the ways in which users usually build up stories:

(a) **Functionality**: are the required functions available in the system? Is the environment suitable for promoting the system's functioning?
(b) **Suitability**: is the system suitable for its specific use and purpose?
(c) **Reliability**: how reliable is the system? Can it be expected to perform its intended functions satisfactorily?
(d) **Usability**: is the system easy to operate and use? Is it community-engineered? Is its interface understandable? Are the technologies included in it easy to operate and use?
(e) **Efficiency**: how efficient is the system? Does this achieve the purpose without wasting resources?
(f) **Maintainability**: how easy is to modify and/or maintain the system?

Below are some examples of users' stories to clarify the concept of CAT:

**Example I**

In our village there are no regular electricity services. There are about 10 hours of load shedding every day. I have seen other villages where almost every house has its own rooftop tanks. They store water during normal hours for use during shedding hours.

*(This story is related to system reliability)*

Examples of acceptance criteria:

(a) Solar pumping is an alternative.
(b) An adequate reservoir can balance the ‘load shedding hours’.
(c) Provision of a diesel generator.
(d) Advise to users to construct their own rooftop tanks and store water during normal hours (this may not suit some users).

**Example II**

I am a village maintenance worker for the water supply system. I have good system maintenance skills but the problem for me is that I cannot get spare parts from local markets.

*(This story is related to system maintainability)*

Examples of acceptance criteria:

(a) System designed using mechanical parts that are easily available in the market.
(b) Provision of a list of spare parts suppliers, who generally stock materials.
(c) Provision of training so that maintenance workers can make spare parts locally.
(d) Machines requiring complex and sophisticated spare parts are avoided.

**Example III**

My stomach is very sensitive and I cannot drink unboiled water. this is very expensive for me. Do I still need to boil water from this system?

*(This story is related to system suitability)*
Examples of acceptance criteria:
(a) There is a treatment plant in the system.
(b) Water is collected from a protected spring source, thus there is no potential pollution problem.
(c) All structures are underground and pollution-tightened.
(d) A water safety plan is provided.
(e) There is a water quality lab, which regularly checks water quality and publishes the test results on notice boards.
(f) Training is provided for point of use water treatment.

WHEN TO CONDUCT CAT

CAT is conducted as soon as the water supply system is complete but before it is handed over to the community. The community is given a certain period of time, typically a few weeks, to operate it themselves. The period should be long enough for them to understand the system properly.

This stage always raises great fears among the engineers, who are worried about what might happen if, at this stage of the project, the community find much difference between the way it was constructed and what they had envisaged. The answer is very simple and clear – this will happen if the system is not community-engineered. Had the system been designed with community involvement at every stage, there would not have been such a discrepancy.

If the WASH sector wants to start the innovative concept of CAT, the designers must first re-engineer their minds to start designing water supply systems more inclined toward community perceptions, preferences and needs. There should be intellectual intelligence and professional honesty, supplemented by transparency in program process, decision and service delivery, by keeping the community at the center of the entire water supply system.

CONCLUSION

CAT is a relatively new concept in the water supply sector. It makes the community the foremost user of the system, and establishes their supremacy over system decisions and service delivery. This leads to the designing of community-engineered systems and, based on user experience, it helps to build up system resilience. This will embolden communities to shape their vision, accomplish their mission and meet their expectations with the full dignity of ownership and accountability. If it happens, CAT will lead to a radical change in the water supply system, from the traditional practice of treating communities as ‘mere service recipients’ to ‘more dignified actors’ in the WASH sector.