

QUALITY CONSIDERATIONS IN DEVELOPMENT WORKS: A CONCEPT PAPER

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Abstract: *The outcome of technical strengthening is always the quality and sustainability of assets created under any development programme. Quality becomes critical and needs rational deliberations. In this concept paper, the need to maintain quality, particularly in any physical infrastructure work in rural development, has been emphasised, with discussions on the reasons for and consequences of not maintaining quality. The paper is primarily based on field experiences and observations of the Author for more than 27 years in Rural Development at the Block, District, State and National Levels in actual executions and capacity building. Some primary areas of improvement and tips for maintaining quality have been mentioned in the paper. The paper is independent of any scheme but mainly focussed on development works. Most discussions are general and applicable to any developmental works through public money.*

Keywords: Quality, Corruption, Error, Rural Development, Panchayati Raj

Introduction

Quality can be described as the 'degree of excellence' as per various dictionaries, and it may be subjective based on feelings or prejudices of the observer or objective based on facts like technical standards/specifications and standard operating procedures. Technical strengthening is essential for maintaining the quality of any physical asset, and it can be related to technical standards and ethics. Nothing in the world lacks quality standards. It is associated with errors, and the real motive behind quality maintenance is to reduce errors up to the best possible levels, as errors cannot be made zero in real life. So, to minimise the errors, quality maintenance is needed. The errors are compared with standards or standard operating procedures; we call those guidelines or, precisely, operational and technical guidelines. The deviation from guidelines is called an error or lack of quality. The paper describes the reasons behind the deviation from the standards, the consequences, and possible solutions.

Maintenance of quality or standards is related to the instructions, our thinking patterns, and common sense. For example, when a person gets his house constructed, she/he cares about quality and standards and consults all possible sources regarding this, as there is a feeling of ownership of work. However, when public work is done, there is an average feeling among executors and citizens that it is government work. So, the question is, 'Are the personal and Government works having two separate quality norms?' or 'Are a common man and the Government two separate entities?' If not, how can this gap be bridged in the minds of executors and the commoner? It is a question.

The other causes behind the lack of standard or quality maintenance are described in further sections. However, by keeping everything constant, we can improve the quality by just paying attention to it and following some basic rules and tips about the standard of different kinds of works, like curing, compaction, maintaining the level top of structures and others. These will be described further. Feeling the public representatives working for charity is also a misconception, and this should be taken care of as all the machinery surrounding the Panchayati Raj Institutions (PRIs) get fair incentives and job security for their work and PRIs (at grassroots levels) are getting nominal incentives. Risk factors, including social and monetary, are high for them. The Ministry of Rural Development, Government of India has spent around rupees 160000 crores in rural areas in the financial year 2023-24, and this budget has continuously expanded from rupees 84000 crores since the year 2014-15 (Ministry of Rural Development, Government of India, 2024b). Out of this, more than 70% of the budget is spent on schemes to develop rural infrastructure through roads, buildings and structures related to water harvesting and integrated natural resources management. In 2024-25, the Department of Rural Development under the Ministry of Rural Development, Government of India alone has been allocated rupees 184566.19 crores on various schemes.

The Ministry of Rural Development is operating the following significant programmes in rural areas (Ministry of Rural Development, Government of India, 2024a);

- i. Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) for providing wage employment,
- ii. National Rural Livelihoods Mission (NRLM) for self-employment and skill development,
- iii. Housing for All: Pradhan Mantri Awaas Yojana - Grameen (PMAY-G) for providing housing to BPL households,
- iv. Pradhan Mantri Gram Sadak Yojana (PMGSY) for the construction of quality roads,
- v. National Social Assistance Programme (NSAP) for social pension,
- vi. Shyama Prasad Mukherjee RURBAN Mission,

- vii. Saansad Adarsh Gram Yojana (SAGY),
- viii. Integrated Watershed Management Programme (IWMP) for improving the productivity of the land.

In addition, the Ministry also has schemes for rural capacity development, Education and Communication, and Monitoring and Evaluation. Apart from the above funds, rupees 236805 crores have been allocated to Rural Local Bodies (RLBs) under the Fifteenth Finance Commission (2021-2026) (Ministry of Panchayati Raj, Government of India, 2024). The fund allocation has been increased to the rural local bodies from Rs.100 per capita per annum in the 10th Finance Commission to Rs.674 per capita per annum in the 15th Finance Commission (Press Information Bureau, Government of India, 2022). Seeing the increased fund allocations and expectations of the people from the Government, quality considerations are now more critical and a priority. The paper focuses mainly on quality consideration in the infrastructure works in rural areas funded through the Ministry of Rural Development. However, the results and conclusion can equally apply to all the schemes, ministries, and governments that implement rural infrastructure works at the grassroots level.

Methodology

This concept paper is based on the Author's vast field and office experience of around 27 years during his postings at eight places at blocks/district and state headquarters at the Government of Rajasthan in direct execution of watershed development, rural development, and panchayati raj works, and applications of geospatial technologies in rural development schemes at National Institute of Rural Development and Panchayati Raj, Hyderabad. Other sources are secondary analyses of extant rules, guidelines, and contemporary, relevant documents related to Ministry of Rural Development flagships.

Why Should We Maintain Quality?

All the rural development schemes are unique and bound by the act, rules and guidelines. Schemes involve a good amount of expenditure every year. The sustainable benefits of these schemes are under debate in academia and the system, indicating a few opposing sides. However, every positive thing in society always comes at the cost of the happiness of a small portion of the population. If a farmer is not getting labour at a lower cost on his farm, it should not be treated as a failure of any scheme, but it should be treated as a chance to enhance farm mechanisation efforts. Increased expense on liquor also may not be an accurate negative indicator of the scheme, as there are other associated enhanced expenditures on health, children's education, etc. Most of the labourers in rural areas are women; they do not waste money and, most of the time, do not give money to their husbands for wasteful expenditures. Apart from creating infrastructure, these schemes support the areas under stress, primarily those facing famines, less productive areas, and remote areas where actual labour payment is less than the prescribed payments under labour laws.

We should maintain the quality and standards with minimum complexities to get the desired benefit from these infrastructure schemes. If durable assets are not constructed in the scheme, there is no benefit in spending the time and energy of stakeholders, public servants, and public money. Money can also be distributed directly to the beneficiaries' accounts based on their poverty levels. Secondly, the durable assets will contribute to the country's GDP and create a livelihood resource base for people experiencing poverty by providing enhanced productivity, raised groundwater levels and infrastructure. Not maintaining quality can result in broken or failed structures; sometimes, situations may be worse than previous.

Areas of Improvement for Quality Maintenance

A few critical areas (but not limited to) for improvement concerning quality in development works are;

Proper Training and Capacity Building

In Rural development schemes, huge functionaries are involved in the implementation, including Government officials and Panchayati Raj Institutions (PRIs). The knowledge and level of experience always vary between and among the Government employees and PRIs from place to place. It is expected that adequate, dedicated and competent (well-qualified and trained) staff are placed at all levels. However, differences are always there when there are variations between political and bureaucratic wills, poverty levels, topography, and social legacy within and between all these levels. Constant and compulsory homogenous training provisions can bridge these gaps. Some gaps between a newly recruited employee or PRI and an experienced one are always natural. However, the new person may have more energy and enthusiasm for work than experienced functionaries.

Capacity building is a constant procedure, and at no stage can any functionary claim that she or he is fully trained and knowledgeable about the construction of quality assets. There are always some climatic, topographical, land and soil differences between regions, and all technological practices change between those regions. For example, persons who work in the Eastern District of Rajasthan State and are provided with sufficient training may require training again if posted in the Western part of Rajasthan due to considerable variations in terrain and climatic conditions. As repeated training with sufficient and well-designed content will be provided for field functionaries, the errors will be reduced, and quality will improve as the functionaries will meet new terms and technologies and the latest instructions on the subject.

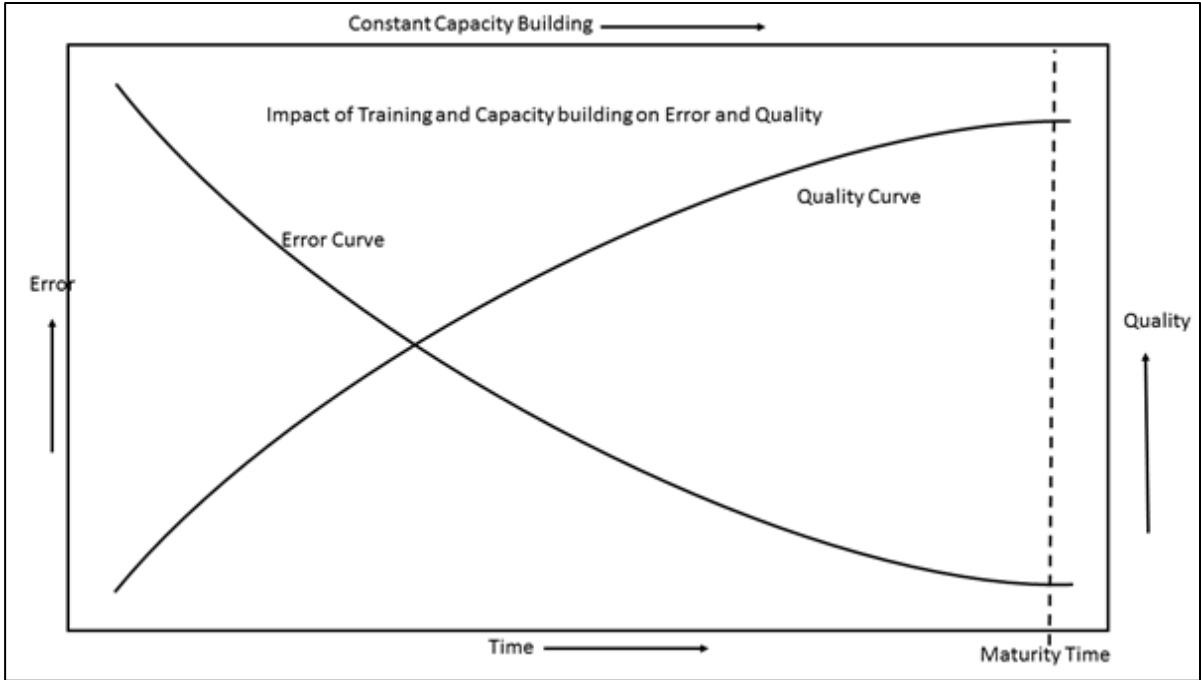
Quality, error, time and capacity building have interrelationships with each other. As time passes and we get time-to-time relevant exposure to the work, training, and capacity-building sessions by the persons having more exposure and knowledge than trainees, we start growing in our knowledge and practical exposure to real works. Sometimes, lectures/demonstrations are given by people with more bookish knowledge and less field exposure than the trainees. In that situation, the capacity-building sessions become less effective, and only some knowledge part is enhanced. The actual practical knowledge holders mostly remained engaged in the field duties, and they wanted to avoid coming into the field of training and academics, sometimes due to a lack of higher education degrees and sometimes due to their reservations and preferences.

However, slow or fast, the capacity is enhanced with time, and training/capacity-building sessions enhance learning. An employee matures in knowledge and practical exposure after a certain period, generally 10-12 years (per the Author's perception, which may vary from person to person). At that stage, in a particular environment, she/he gives the ultimate quality with minor errors. Further training sessions only affect his performance once he is promoted and given new responsibilities or provided with a different department/environment. His/her capacities almost remained stable in that work. However, there may be many scopes remaining for improvement, but she/he may be reluctant to learn as it is not desired in her/his working environment. To support this, a rule of 10,000 hours exists, and it is mentioned that anyone can achieve expertise in any skill with 10,000 hours of practice (Mullem, 2016).

There are also some other issues in training and capacity building. At the national level, training of trainers (ToTs) is conducted, and these trained master trainers train the district-level master trainers and block-level master trainers. They train the actual persons working in the field. Still, who was trained, who is working currently and which master trainer transferred to which place after getting training is not monitored, and all the exercise sometimes becomes futile. People still need more guidance on matters in the field. The involvement of third parties in training and capacity building also sometimes increases the difficulties as they are not attached to the stakeholders for the long term. After training is given by them, when actual guidance is required in applications as a follow-up, the trainers are not found anywhere as they get engaged in the next district or on the next task. Second, the persons deputed for training are mostly thought of as second-grade idols in the respective departments, and the officers deputing them for training also think of the training as formalities and sometimes a waste of time, money and energy. Some participants may also have a different reason for coming to the training than learning. Hence, the zeal of these persons after training always remains less, and better training outputs are not found. One reason may be that most institutes provide supply-based training and try to sell the things whether they are required or not in the field. Proper Training Needs Analysis (TNA), and department demand should be the main criteria for training. The other criterion may be the capacity of trainers, whether they can provide something of higher value to the trainees or not.

The Impact of Training and Capacity Building with Time on Error and Quality is shown in Figure 1 below.

Figure 01: Time Versus Error and Quality Curve



The indicative Figure 1 shows that as the experience of functionaries increases with time, the quality improves, and errors are reduced. However, after a specific time, the curve of both becomes flat, and further quality improvement and error reduction are only possible with refresher courses, higher-level training and capacity building on the latest developments, tools and techniques in the respective field.

Work as per Instructions or Instructions as per Nature of Work?

The other important aspect of quality consideration of development work is the practicality of instructions. The nature of work should be considered first, and rules/instructions should

respect the nature of work. Any deviation of instructions from the nature of work may attract audit objections and imaginary quality issues, even if the quality of work is good. We can understand this from a few examples. One is using machines in work, where we have to use machines in some works to maintain minimum quality requirements. Otherwise, the whole investment may go to waste. If we do not use vibrators in cement concrete, then bubbles will not be removed, the strength will not be as per desired standards, and a small ratio of air bubbles in concrete may cause a significant reduction in the strength of concrete. If we do not use proper means for compaction on earthen structure, it may lead to failures due to water seepage. Hence, judicious use of machines as per the nature of work is always desirable, and we cannot avoid it for labour generation. However, the work that labourers can do should be accomplished by labourers only, not by tractors, hydraulic excavators or other machines.

Another example is maintaining a labour-material ratio of 60:40 in works. It is sometimes forced on the lower staff to maintain this. However, it is well understood that for different types of work, this ratio will vary definitely as different labour and material components are required for different types of work. Where the labour component remains almost 100 per cent in earthen works, the material component is high in building works, and in cement concrete roads, a material component may be up to 80-85 per cent. In that case, putting pressure on village secretaries to maintain the ratio of labour and material at 60:40 may result in fake adjustments of payment vouchers. Fortunately, rural development schemes like MGNREGA maintain this ratio at the district level.

Hence, the instructions should be issued after careful examination of the nature of the works, topography, work culture and geography of the area for which instructions are being issued. These should also be in a simple manner and preferably in local languages as most of the time, no one reads these instructions correctly when it is rolling down, and ultimately, the last executor, mostly Junior Engineer/Junior Technical Assistant (JTA) or village supervisor, village revenue official receives and reads these. They start interpreting it in their own ways without simplicity and native language.

Corruption vis-à-vis Quality

Corruption is India's enemy within (C P Srivastava, n.d.). Corruption is the biggest enemy of quality, and it can defeat all the knowledge and training of the executors. If involved in corruption, an official cannot force subordinates and lower staff in the true sense to maintain quality, except from time to time, suggestions and superficial monitoring and checking that something disastrous is not happening at the ground level. Quality is inversely proportional to corruption (see equation 1), and corruption comes at a cost. Whether it may be 1- less quantity of material, or 2- less quality of material, or 3- may be poor artistry, or 4- overvaluation in measurement books, or 5- work done by machines and valuation done by labour, or 6- work did not exist at all, and entries are fake. It may also be a combination of these. However, corruption will only come from work.

$$(\text{Quality}) \propto (1/\text{Corruption}) \quad (1)$$

There are two branches: the intellectual says that by reducing the salary payments of employees, we can save the public money as people will not stop corruption, and the second opinion is that by enhancing the salaries, corruption can be reduced. Which one is more impactful and suitable in the Indian environment? It is a matter of research, but almost both have failed. Higher-paid persons are also involved in corruption by having high powers of playing with public money, and low-paid persons are also not far from corruption.

Interestingly, there are two kinds of people working parallel in a corrupt system and doing corruption; one kind is like an engine, and the other is like a sprocket in the chain. The first type of persons/employees always remained active and happy in a corrupt system. They do not feel any apology for their work. The other kind is always guilty of corruption. Still, they cannot escape from the system because of the compulsions of their families and the fear of transfer or penalties for not supporting the system. Their position is like that of a sprocket, and as the engine starts and force drags the chain, the sprocket has to move forward in the same direction. Most people in India are second kind and waiting for an angel or dictator to stop this corruption and provide a bright future for them and their progeny. Another critical aspect of corruption is that it always has a top-down flow or drag, not bottom-up, and till top levels are not cured or purified, the efforts to reduce corruption will not work. There are still hopes of maintaining quality by applying the best of our knowledge and experience in the remaining amount after leakages (it is the better name for corruption). In a simple equation (see equation 2), we can say;

$$Z=X-Y \quad (2)$$

Here, X is the original money allotted for the work, Y is leakages, and Z is the remaining money spent on work. If we use this Z amount effectively (fortunately, some employees do this), one can get miraculous results by applying their best knowledge and experience to work. We may still raise a vast resource base and infrastructure for people experiencing poverty by applying some basic essential technical knowledge and vigil.

Deployment of Competent Staff

Most development works do not regularly permit staff deployment in the budget, so staff is generally hired on a contractual basis. Qualifications and experience are also kept at low levels. In that case, several persons with higher qualifications and experiences are not willing to join a work at a lower payment and contractual basis. After a specific time, the contractual employees make associations and raise the demand for permanent jobs. Most of the time, with long efforts and court cases, they are absorbed in the regular system. As a result, one side encourages the inclusion of staff with low qualifications and experience in the system. Conversely, a dedicated and trained staff shortage is always there for Rural Development Works.

Use of Geospatial Technologies

In rural development works, all entries relating to works, such as details of the shelf of works, Global Positioning System (GPS) coordinates, the status of implementation, and photographs of works at different stages, are entered in respective Management Information System (MIS) of schemes. Here, geospatial technologies have also been mentioned, a proven technology for better planning and monitoring any scheme with earth-related features to be constructed under the scheme. The Ministry of Rural Development, Government of India, has rolled out Geo-tagging of complete assets under almost all schemes. The application of GIS/GPS in the field can ensure better monitoring and indicate the inequalities in the field, as inequalities have a robust geographic footprint. Maps are a powerful tool for understanding factors and measures to address such issues. With efficient Open-Source GIS software, mobile mapping and navigation tools, the field functionaries can fill any gap without the internet. It is helpful when the needs of the functionaries are minimal, and they are burdened with the complexity and cost of commercial software and utilities.

Few Tips and Tricks for Quality Enhancement

A significant portion of quality in development works can be attained by applying simple things. First and foremost is our desire to do so. Quality can only be maintained if there is respect for public money and the public. If it is there, quality can be maintained even if all other factors remain constant.

Judicious use of Formula/Techniques

This factor majorly depends on relevant qualifications, experience of the executor and their continuous capacity building. During the design of structures, we may misinterpret the formula needed correctly. Like when we derive the intensity of rainfall as per the time of concentration in the Rational Formula, the wrong/reverse reading of the Rainfall Intensity v/s Time of Concentration graph may result in the contraction of the waste-weir instead of widening it, and ultimately, the structure will collapse. One must know the formula's context to avoid using Strange's table to generate the peak runoff rate. Another example is that when we construct a series of structures on contours against the slope, the vertical interval is a primary concern, and the horizontal interval may vary as per slope during the length of contours. However, our higher-level technicians mostly fix the horizontal interval, assuming a particular constant slope over the area, even for the whole state or district. Then, breakage/failures of structures result in the field. A relevant knowledge background and proper training can be helpful to avoid this kind of situation.

Maintaining the Level top of Structures

Suppose we maintain the level at the top of the water harvesting or recharge structures and the proper layout for the structures with Flexi Tube Level, A-level or Dumpy level. In that case, quality can be largely achieved. Not maintaining the top level may be the most significant factor for underusing or failing earthen structures. Maintaining top-level elevations can be understood as keeping the height levels the same at all points on top of the structures on their whole length so that when the water level rises, it does not get any lower corners on the structure for passing through and breaking the structure.

Proper Compaction

Compaction is an essential factor in earthen structures, and we can also use any machine for this. Most of the time, labourers need to do this task properly, and they remain busy just digging and throwing the soil on the length of the structures. The breaking of clods at the top layer and dressing needs to be improved for proper strengthening and durability of structures.

Proper Curing

In masonry and concrete structures, it is said that only curing can hide all the weaknesses of the construction if strength is a concern. This is highly avoided in the structures of the field. As the cement takes time to gain strength and water plays the leading role in the process, we should follow the desired and standard code of practices like Indian Standard (IS) codes for getting the desired strength/quality, specifically in only cemented or cement concrete or reinforced cement concrete. These areas for improvement are based on the primary perceptions of the Author based on field experiences. More critical areas can be added, and a comprehensive debate on quality concerns in development works can be initiated.



Plate 01: The level top of the structure maintained by the Flexi Tube Level

Conclusion

The quality of development works is a complex phenomenon. It can only be described by considering past, present and future scenarios and our social and cultural patterns. Proper training and capacity building, issue of instructions as per nature of work, minimising corruption, deployment of competent staff, extended use of geospatial technologies, knowledge of essential tips, judicious use of formula/techniques, maintaining the level top of structures, proper compaction, proper curing are the essential aspects for taking care of quality in development works. These are supplementary suggestive areas in addition to regular guidelines and standard operating procedures. Other sub-factors are always there to maintain the quality, and the executors should use their full wisdom to utilise the public money even when they cannot control the other factors. The change in overall conditions and circumstances of the works, traditions and practices cannot be done in a day, and it is a collective and perpetual responsibility of all.

References

1. Ministry of Panchayati Raj, Government of India. (2024). *Central Finance Commissions' Reports related to Rural Local Bodies (RLBs) | Ministry of Panchayati Raj | India*. <https://panchayat.gov.in/finance-commission/central-finance-commissions-reports-related-to-rural-local-bodies-rlbs/>
2. Ministry of Rural Development, Government of India. (2024a). *About the Ministry | Ministry of Rural Development, Government of India*. <https://rural.gov.in/en/about-us/about-ministry>
3. Ministry of Rural Development, Government of India. (2024b). *BUDGET | Ministry of Rural Development, Government of India* [Dynamic]. <https://rural.gov.in/en/finance/budget/budget>
4. Mullem, P. V. (2016). Peak: Secrets From the New Science of Expertise. *International Sport Coaching Journal*, 3(3), 368–370. <https://doi.org/10.1123/iscj.2016-0089>
5. Press Information Bureau, Government of India. (2022). *The vice president calls for devolving 3 Fs—Funds, functions, and Functions- to local bodies*. <https://pib.gov.in/pib.gov.in/Pressreleaseshare.aspx?PRID=1815682>
6. Srivastava, C. P., IAS, Retd. *CORRUPTION* (1st ed.). Macmillan. https://library.sahajaworld.org/materials/books/Corruption_C.P.Srivastava.pdf