

### Main Problems in Working to a Quality Guide

In addition to basic difficulties stemming from changes to the work schedule brought about by the activation of the quality management system, there are also problems, part of them specific to the quality guide itself, and part likely applicable to any quality management system.

In 10 local authorities, interviewees claimed that it was “difficult to work by dictation from above”. Project managers and field staff are used to independence in their work, and to relative freedom in their considerations and resultant decisions. Work procedures dictate a manner of operation for different activities, which naturally varied from project to project. For the sake of quality and also uniformity, quality procedures mandate a uniform work for all projects. Furthermore, the management team has to perform activities that it did not before, also by dictation from above. The claim of “dictation from above” can be overcome through involving the management staff in procedure writing.

Another claim that came up in interviewee responses was it was difficult to implement the quality guide to a project in its startup stages. In most cases, the quality guide is implemented in its advanced stages, at which time the problem arises in applying the quality guide to the phases already performed. A decision must be made which parts of the guide to apply retroactively and which to apply from this phase onward.

The concepts of the quality guide are taken from the quality terminology, and many times these concepts are not understood. At times, a word has one meaning with respect to quality and another with respect to management of construction projects. For example, the word “exceptions” in connection to quality means deficiencies and performance discrepancies, while in construction project management it means extra work that was included in the original contract. In order to solve this problem, if only partially, and if interested, is to assign to one concept two names: one name according to the quality terminology and another name in brackets that applies to the terminology of construction project management.

Yet another problem, probably the most difficult, is the lack of perseverance. Implementing a quality guide must become a thing of habit. Many local authorities prepare quality guides and some of them receive certification with relative ease after that. When lack of implementing the guide is encountered during simple reviews, authorities noted that they (meaning other local authorities of course) perform only the necessary minimum to maintain certification.

### Change in the Clients' Positions (Users of the Engineering Project)

The wide public, referred to below as clients, is the user of the engineering projects. These are the principals, teachers and students in the case of a school construction project, youth in the case of a youth club, seniors in the case of day centres for seniors, and so on, for whom the engineering project is carried out. Local authorities that applied the quality guide significantly improved the connection with the clients, who were invited to meetings and turn-over tours. They were pleased and offered words of compliment and support upon first use. This successful result followed the

improving of quality in all that is related to managing the quality management system.

The number of complaints was relatively small, and when occurred, they were in non-material issues. A large part of complaints was resolved during the implementation process, without waiting for construction completion and the beginning of use. Clients were involved in the management process, planning and even construction. They were able to complain in real time, since they were involved all the way, and participated in meetings both in the authority’s offices and on the site itself.

In one case, a kindergarten teacher noted during performance the lack of a water tap in the playground, and requested its inclusion. During the turn-over tour, the water tap was found to be ready for use. Consider what would have been required to do had the teacher not noted the missing water tap. Interlocking stones would have had to be dismantled, the wall chiseled, and a water tap installed. This would have cost much money, required performing work in an occupied building, and of course the wall and stone finishing would not have been clean and uniform.

In another case, the manager of a seniors’ day centre requested, during the planning phase, the installation of low water taps with a drainage network and seating chairs. The request was made because Muslims needed to wash their faces, hands and feet before prayer. In this case too, the request was handled in real time during planning.

Main Shortcomings of Quality Guides

For the sake of balance, and to complete the picture, interviewed quality managers and authority engineers were asked what the quality guide lacked and what harm it caused to the engineering department. Most quality managers and authority engineers replied that there was no harm from the implementation of the quality guide. The answers are summarized in the table below.

Table 1 – Opinions of Quality Managers and Authority Engineers on Shortcomings

	<b>No Harm</b>	<b>Time Consuming</b>	<b>Small Problems</b>
Number of Quality Managers and Local Authority Engineers	28	8	4

As can be seen from the table, the majority of local authority engineers and quality managers responded that the quality guide was not harmful, and that they thought it would do them good. Only 8 responded that the quality guide was time-consuming, and that it obligated them to spent one hour more on project management than they would have with the quality guide. Four (4) responded that the quality guide was liable to produce a situation of “small heads“, meaning people will do what the guide and procedures require without engaging their minds (heads) about the intentions within both.

When project managers, inspectors and planners were asked about the shortcomings pf the quality guide, the answers were different from those of quality managers and authority engineers. Their answers are in the next table.

Table 2 – Responses of Project Managers, Inspectors & Planners on Shortcomings

	<b>No Harm</b>	<b>Extra Paperwork or Time Consuming</b>	<b>Confusing</b>	<b>Adds Unwarranted Layer</b>
Second Line Interviewees	22	10	2	2

Although most interviewees responded that there was no harm from the implementation of a quality guide, others noted that there was harm. 10 answered that the quality guide added extra paperwork or was time consuming. 2 claimed that this created mind confusion, and 2 indicated that he guide added an unwarranted layer, which was similar to the “small head” claim by 4 quality managers and authority engineers.

Additional Claims

Additional claims and other answers were isolated. Someone indicated that the guide was not applicable to the construction industry, another noted that the guides neutralized independent thought, and yet another indicated that the guide helped little as it was implemented by additional sources in the sector. Lastly, someone indicated that he did not believe in the guide or in the ISO-9000 standard, claiming that the standard was too general and generic, and that everyone could do with it as he/she pleased. The standard was not similar for example to Standard 466 – Constitution of Concrete in any shape or form.

Benefits of Implementing a Quality Guide

Expected Benefits

The table below summarizes the answers regarding the main expected benefit from applying quality guides in the local authorities.

Table 3 – Main Expected Benefits from Quality Guides

<b>Question</b>	<b>Benefit</b>	<b>Maximum Benefit</b>	<b>Partial Benefit</b>	<b>Little Benefit</b>	<b>Almost no Benefit</b>
11	General benefit	22	13	3	1
12	Saving time	21	14	3	1
13	Saving public money	23	14	2	1
12 + 13	Saving time & public money	43	28	5	2

Interviewees were asked, through questions 11 to 13 in the questionnaire, what were, in their opinion, the main expected benefit from quality guides for local authorities. Those answering the question could only choose one answer for every question. The summary of answers in Table X show that interviewees pointed out that saving public money (23 out of 40) was at the top of the list, and that money saving was the most important issue for working with a quality guide. In second place (21 out of 40), they put the issue of saving time in project management. To conclude regarding the desired benefit in a quality management system, the two responses lead to a clear and unequivocal answer that 72 out of 80 respondents expect savings in time and public money. Fewer respondents thought that quality guides brought no benefit to the authority.

It is interesting to find out that the interviewees believe in that, and this good for the quality management system. This authenticates the theories which Deming and Juran, quality experts, put forth.

### Other Benefits of Quality Guides

There is a special chapter in the ISO-9000 standard devoted to “Statistical Techniques”, which requires the establishment and maintenance of procedures documenting the implementation and control of statistical techniques, to control and verify the product characteristics and fitness of the procedures. Despite this, only a small part of local authorities that participated in the study perform statistical analysis geared to improve various indices, following the implementation of the standard or quality guide. Many authorities claimed that they still did not have data, since they only recently started learning the process and data collection. In their opinion, this chapter in the standard was simply unnecessary. Local authorities that perform statistical analysis document data on the complaints and opinions of the various project managers, after the completion of any project.

Problems, for example, included lack of forms, procedures not matching for all projects and more. After collecting data, a histogram was created and a Pareto analysis was performed according to the number and costs of complaints, after which conclusions are drawn. Based on the conclusions, it was decided, for example, to enable project managers to suggest a pre-delivery form, and not to work with the final delivery form.

Obviously most local authorities do not function like this, and the acceptable way in most of them to prevent future complaints is through corrective action. In almost all projects, handling exceptions is done through corrective actions, only if the complaints are significant or recurrent. In general, a complaint is resolved through the project management itself.

In spite of this, interviewees were asked to express their opinions about whether the ISO-9000 standard reduces complaints in the project management process. In order to focus the question, the interviewees were asked, at the end of managing every engineering project, if in their opinion the quality management was successful in reducing the number of complaints. And also, what the impact was of the quality guide on the successful management of the engineering project About 38%

answered that the engineering project success stemmed from managing a system for quality management, and 43% answered that the success stemmed from the fact that a quality management system was activated. Local authority engineers and quality managers answered this question (Number 8), and their responses are found in the following table.

Table 4 – Impact of Activating a Quality Guides on Engineering Project Management Success

Percent success of engineering project	75%	50%	25%	5%
Impact of quality management system activation on the success of engineering project management in local authorities	14	16	7	0

There is no doubt that the interviewees were convinced one way or the other that managing a quality system brings about success in managing engineering projects in the local authorities. 14 out of 40 interviewees responded that the success of engineering projects resulted from activating a quality system, and that the quality guide contributed about 75% to this success. 16 out of the 40 interviewees thought that activating a quality system contributed about 50% to the success of engineering projects. Only 7 out of 40 thought that activating a quality system contributed only 25% to the success, and that there existed other systems which contributed to the success of engineering projects.

As well, the number of complaints decreased, and if any, they were simply complaints that were easily resolved, unlike previous complaints which had no solutions or were particularly difficult to resolve.

Among the second line interviewees, the project managers, inspectors and planners, there was greater uncertainty than that among the quality managers or authority engineers. Only 50% believed that a quality guide decreased costs, and many of them, it actually increased costs. To explain this justified phenomenon, project managers, inspectors and planners noted that a quality management system required additional financial and time resources, especially during the initial stage of establishing the quality management system. They are aware of high expenditures which are not always obvious to them. It is also possible that project managers, inspectors and planners refer to the status of their own projects and not to the status of the local authority as a whole.

Local authorities indicated that there was a rise in engineering project management costs, which causes varied among authorities. In 3 authorities, the implementation was still “limping”, without success, at least in the meanwhile, to extract the inherent potential in the quality system. On top of this, in these authorities, many procedures are mainly not properly activated in projects. Another authority had a documented, methodical and efficient quality control system which caused additional expenses for a consultant and the Standards Institute. However, in another authority, the number of complaints significantly decreased, but the dedicated time resources, by management staff in weekly meetings, during the establishment of the quality system and procedure writing, in addition to the time regularly invested by

project managers, were so high that they tilted the balance against rather than for the costs.

Quality managers and interviewees, in local authorities with accreditation and in those with an almost-complete quality guide, were asked about improvement in various indices, following the implementation of a quality guide or ISO-9000 standard. A summary of their responses is in the following table.

Table 5 – Improvement in Indices after Implementing ISO-9001 Standard

	<b>Improving Schedule Compliance</b>	<b>Improving Budget Compliance</b>	<b>Improving Customer Satisfaction</b>	<b>Improving Project Quality Management</b>
Quality Managers	27%	22%	40%	-
Project Managers and others	25%	17%	33%	66%

It can be seen that quality managers think that there was no improvement in meet budgets or improvement in time tables. It is worth mentioning that about 50% of quality managers are new and it can be assumed that their position is caused by inner feelings and not based on facts. About 50% of the veteran quality managers think that there is a change in meeting time tables and budgets. Those quality managers have a more reliable information. Meeting time tables exists more in those Local Authorities that operate some sort of a quality managing system. Another component that characterizes the period of current study is the recession that takes place these days, and it is possible that improvement in meeting time tables was achieved due to the fact that there is no pressure of managing projects in this period. Naturally, all that with the addition of application of a real quality system.

On the other hand, the improvement in executing and managing the engineering projects receives a high significance for interviewees; about 66% of them think that there is improvement following an implementation of a quality guide. On the other hand, the interviewed managers think that improvement in meeting the budgets (17%), stems from the fact that they don't have the data and that data regarding meeting budgets lies with Authorities' engineers. Same goes regarding meeting time tables.

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