

# Document Requirements Attributed to ISO9000-Based Quality Management Systems

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## Introduction

ISO9000-based Quality Management Systems (QMSs) have been extensively implemented in the construction industry of Hong Kong for over a decade. While the benefits of ISO9000-based QMSs are well recognized, some operational staff believe there is a drastic increase in workload as a result of the extra documentation requirements of ISO9000 (Moatazed-Keivani *et al*, 1999).

According to Fok *et al* (2000), a number of systems have met with significant resistance from the workforce, and it is difficult to generate commitment of site personnel to the QMSs due to excessive workload and deep-rooted culture (Serpell, 1999). Tang and Kam (1999) even suggested that some documents required by ISO9000-based QMSs may be excessive and do not add value to the construction quality.

Although a series of documents generated and maintained for satisfying the design, time, cost, quality, safety and environmental requirements of various stakeholders, some of them are known to be contractually specified because of a client's own quality and safety initiatives rather than purely for facilitating the implementation ISO9000-based QMSs. Without knowing the extent of any increase in documentation after ISO9000-based QMSs were implemented, it is difficult to estimate the extra workload imposed upon the operational staff.

## Survey Method

In order to find out more about the documentation required during the implementation of ISO9000-based QMSs, a survey was conducted with contractors in Hong Kong. The objectives of the study were to uncover the proportion of documents which are required by (i) the client; (ii) ISO9000-based QMSs and considered useful; and (iii) ISO9000-based QMSs but considered to be not adding any value.

To ensure the samples come from a diversity of disciplines and sizes, random samples were drawn from various categories of listed contractors being maintained by the Environment, Transport and Works Bureau and the Hong Kong Housing Department. Out of the 112 targeted samples, 36 valid replies were received representing a response rate of around 32%, which is considered reasonably high for a study of this kind.

In this survey, respondents were invited to estimate the percentages of project documentation (procedures and records) that are generated by (i) contractual requirements from the client and/or statutory or regulatory requirements (i.e. documentation that they would still have to produce even if they were not ISO9000 certified); (ii) specific ISO9000 requirements over and above item (i) which they consider to be useful to their organisation in achieving customer satisfaction; and (iii) specific ISO9000 requirements over and above item (i) that add little or no value to their organisation. Besides, respondents were asked to estimate the percentage decrease in 'non-valuable' documentation after changing from ISO9000:1994 to ISO9001:2000.



## Distribution of Project Documentation

Figure 1 depicts the normalised average distribution of the three types of documentation generated for a construction project, as perceived by the respondents. As shown in the Figure, 68% and 61% of the documents are required by the public and private clients respectively as a result of contractual requirements and/or client's quality initiatives. Conversely, 32% and 39% of the documents in the public and private projects respectively stem from the implementation of the ISO9000-based QMSs. Of this, 77.2% (i.e. 24.44% out of 31.66%) was considered as useful in improving the quality of a public project, and 71.3% (i.e. 27.72% out of 38.86%) was rated useful to the quality of a private project. One could argue that while the public clients require a high volume of documents, the documentation required by ISO9000-based QMSs would still play an important role in ensuring the desired quality of construction project is attained. Furthermore, it may be argued that most of the documents in the second and third categories, i.e. those considered to be generated by a ISO9000-based QMS are in fact largely developed to fulfil the contractor's own quality management requirements.

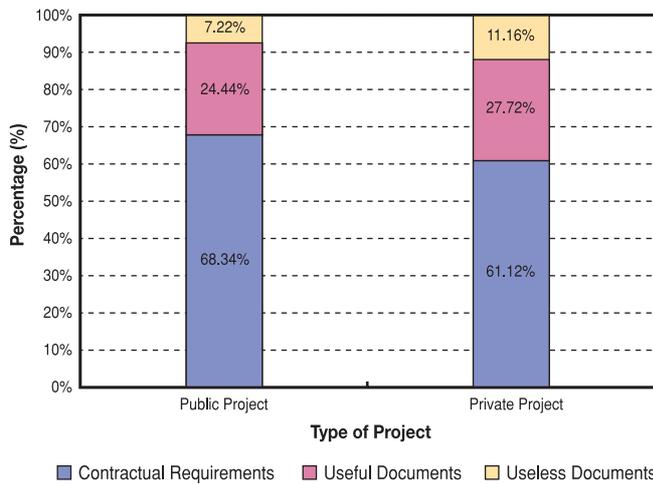


Figure 1: Documents required by ISO9000-based QMSs

## Change in Non-Valuable Documentation after ISO9001:2000 is Introduced

When asked whether the introduction of the ISO9001:2000 would reduce the amount of non-valuable documentation, only 7 respondents did not think there would be any reduction. All other sampled contractors indicated that there was a remarkable decrease in the non-valuable documentation after migration to the 2000 version, and the reduction could be as much as 40% (Figure 2). On average, a 12% decrease is perceived. ISO9001:2000 offers a greater flexibility and contractors thus have a much better control in deciding on useful documentation to be maintained.

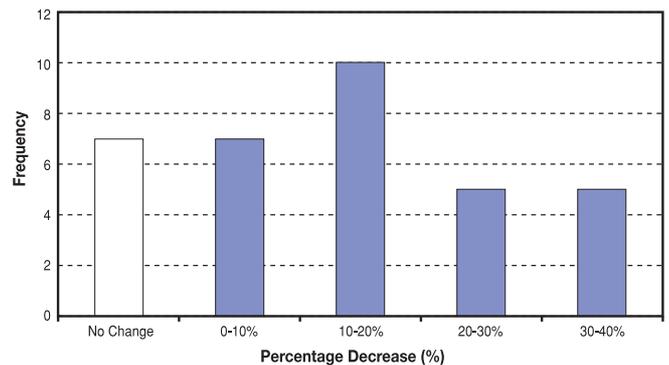


Figure 2: Decrease in 'non-valuable' documentation after changing to ISO9001:2000

## Conclusions

Although the above findings are from a small sample, the evidence appears adequate to reconsider any perception of blaming ISO9000-based QMSs for drastically increased paperwork. Some staff may still consider any extra documentation stemming from the implementation of ISO9000-based QMSs as a burden to them, and they may choose to bypass some of the checking procedures by just signing the forms without doing the actual checking.

This is supported by the findings in a recent survey that some less committed contractors would try to bring the paperwork up-to-date just in time for auditing (Love and Li, 2000). If ISO9000-based QMSs are not maintained effectively, companies may find themselves being channelled into managing the documentation aspects of the certification process, rather than into achieving the objectives of the quality system itself (Kelada, 1992).

As the majority of any extra documentation required by ISO9000-based QMSs were considered useful to the contractors in improving project quality, an attitudinal and cultural change to the staff is needed (Tam *et al*, 2000; Love *et al*, 2000). Frontline staff should be guided into a culture that ISO9000-based QMSs are an integral part of daily work, so that the system is almost 'automatically' maintained on a regular basis and documentation becomes easier and a reflection of the way things are done (Love and Li, 2000). By drawing the attention of management and operational staff to the benefits of ISO9000-based QMSs such as reduction in non-conformity and rework, it is possible that their commitment to ISO9000-based QMSs would increase and hence achieve the desired goals of customer satisfaction and continual improvement as required by the latest ISO9000 standard.

Furthermore, the provisions in the latest ISO9000 standard provide opportunities for each organisation to further reduce what may be identified as non-value adding documentation. Therefore, it may now be worth investigating whether any of the client-required documentation is non-value adding. Finally, an open minded approach is suggested when examining the value of each piece of quality management documentation, given general misgivings as to a feared volume of extra paperwork. Such fears may have been initially fuelled by a general inertia to any system change, as well as by resistance to some big changes needed in organisations which had not yet developed an effective QMS. It appears that extra documentation for ISO9000 purposes alone should be somewhat marginal if a good system is in place; and it is therefore worth looking objectively at the overall costs and benefits of ISO9000-based QMSs rather than merely dismissing them on the potential for extra paperwork. The findings presented here indicate the need for an overall re-assessment, with a view to optimising approaches to useful quality management systems for construction organisations.

## References

- Fok, L.Y., Hartman, S.J. Patti, A.L. and Razek, J.R. (2000) Human factors affecting the acceptance of total quality management, *International Journal of Quality and Reliability Management*, 17(7), 714-729.
- Kelada, J.N. (1992) *Integrating Re-engineering with Total Quality*, ASQC Quality Press, Milwaukee.
- Love, P.E.D. and Li, H. (2000) Overcoming the problems associated with quality certification, *Construction Management and Economics*, 18(2), 139-149.
- Love, P.E.D., Li, H., Irani, Z. and Faniran, O. (2000) Total quality management and the learning organisation: a dialogue for change in construction, *Construction Management and Economics*, 18(3), 321-331.
- Moatazed-Keivani, R Ghanbari-Parsa, A.R. and Kagaya, S. (1999) ISO 9000 standards: perceptions and experiences in the UK construction industry, *Construction Management and Economics*, 17(1), 107-119.
- Serpell, A. (1999) Integrating quality systems in construction projects: the Chilean case, *International Journal of Project Management*, 17(5), 317-22.
- Tam, C.M., Deng, Z.M., Zeng, S.X. and Ho, C.S. (2000) Quest for continuous quality improvement for public housing construction in Hong Kong, *Construction Management and Economics*, 18(4), 437-446.
- Tang, S.L. and Kam, C.W. (1999) A survey of ISO 9001 implementation in engineering consultancies in Hong Kong, *International Journal of Quality & Reliability Management*, 16(6), 562-574.

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