CHAPTER 9

CONCLUSIONS

This chapter provides a summary of the work carried out and listing the main conclusions that can be drawn from the results obtained. Also, limitations of the study and possible avenues for future research are enumerated there in.

9.1 INTRODUCTION

The condition of the construction industry in the developing countries is totally different from that in the developed countries. The methods of quality management adopted in the developed countries are not directly applicable to the conditions in developing countries like India. Housing and development are mutually supportive. Housing provides a base for achieving crucial goals in other sectors of the economy and upgrades the quality of life. The Nirmithi Kendra which was initiated at Kollam in 1985 for providing shelter to thousands rendered homeless due to natural calamities became a success by integrating beneficiary participation with appropriate technology and locally available resources together with the effective coordination of tasks and related agencies. A Nirmithi style of technology which emphasised cost effectiveness and environment friendliness was thus evolved.

9.2 SUMMARY AND CONCLUSIONS.

This study investigates the various aspects of implementing TQM in the Indian housing construction organisations and its possible benefits. Thirteen TQM constructs and two performance indicators as applicable to the construction industry were identified as part of the study. ISO certified and non-certified organisations were then subjected to detailed study to bring out the extent to which TQM constructs are practiced by these organisations. The study revealed that there is no significant difference between ISO certified and non-certified organisations with respect to these constructs. Comparison was carried out on the basis of performance indicators also. Here there was significant difference noted at 1% level. It is established that certified companies are performing better than non-certified companies with respect to performance indicators.
A methodology for the assessment of housing quality was developed as part of the study. This was done based on people’s perceptions on housing quality. The factors identified were grouped under seven indicators. Initially the mean scores were tabulated and compared. Then regression analysis was carried out and the significant factors corresponding to each indicator was identified. To have more reliability for these findings the data was further analysed using binary logistic regression model. The results provided the factors significantly contributing to housing quality.

The study was then focused on Nirmithi Kendras. The application of management practices in Nirmithi Kendra was compared with certified and non-certified organisations. The studies on Nirmithi Kendras were carried out in two stages. The practice of TQM constructs within the organisation was examined in detail. The need to have better orientation for Nirmithi Kendras towards constructs like TMCL, CF, CI, OC, PQM, BM and IF were evident from the studies. This is suggested to restore the lost popularity of Nirmithi Kendras and make them function as excellent organisations. In addition, the model formulated by EFQM for an excellent business organisation was applied to the Nirmithi Kendra. It is seen that there exists the urgent need and scope for the Nirmithi Kendras to move towards an excellence model.

The second stage of studies on Nirmithi Kendra concentrated on performance indicators. The performance indicators namely return on quality and product attribute were significantly lower when compared with ISO certified and non-certified organisations. Survey conducted on the houses constructed by Nirmithi Kendras using the housing quality assessment methodology revealed that the indicators showed lower levels of scores for indicators like aesthetics and sustainability.

A customer satisfaction survey was carried out as part of the research study. Here, mainly the maintenance/ service part as well as financial support was scoring lower values. Based on these studies, a systematic approach for implementation of TQM for Nirmithi Kendras is brought out.
9.3 THE TQM MODEL FOR NIRMITHI KENDRA

The research identifies the need and scope for directing Nirmithi Kendras towards organisations of excellence. From the findings of the study, the following approach for implementation of TQM practice in Nirmithi Kendras is recommended.

![TQM Model Diagram]

**Fig. 8.1 TQM approach for Nirmithi Kendra**

This is achieved by improving at the organizational level, in the areas such as top management, commitment and leadership, organizational culture, customer focus, process quality management, continual improvement, bench marking as well as infrastructure and facilities. This in turn will automatically improve on the performance indicators, such as product attribute and return on quality. According to the analysis by EFQM model, Nirmithi Kendras have to improve upon results.
orientation, customer focus, leadership, people involvement and continuous improvement.

At the household level, the indicators such as aesthetics, sustainability, concept, design and infrastructure should attract more thrust. Customer satisfaction can be improved by the Nirmithi Kendras by facilitating better financial support, quality of construction and maintenance. The approach suggested is expected to serve as an action plan to bring about changes in the functioning of Nirmithi Kendras at the organisational level as well as to enhance customer satisfaction so that the unique/virgin concept of these Kendras does not whither away.

9.4 SCOPE FOR FUTURE WORK

The Housing Quality Assessment Methodology developed during this study can be used as a tool for planners/designers to evaluate any target group’s requirements on housing quality. The quality indicators and factors influencing them are dependent on the target population. There is room during further research to enrich the list of indicators and corresponding factors which will add more accuracy to this methodology. At present several organisations operating in the construction sector have come forward and sought certification. Future researchers can therefore work on larger sample size. Further studies are also suggested on identifying factors contributing to housing quality by incorporating income wise stratification in similar living habits.

Study on Nirmithi Kendras was restricted to certain districts of Kerala with major thrust given to Kollam Nirmithi Kendra. Studies can be extended to other Kendras as well for more accurate results. Similar studies in different cultural and economic background could help the researchers to further understand and add to the knowledge and literature on the intricacies and relevance of the various housing quality indicators. It is felt that this methodology can be applied to any other homogeneous population elsewhere. The methodology is expected to serve as a valuable tool for planners, architects, builders and contractors and other practitioners of housing industry. It is intended that the methodology can be updated as basic standards evolve and get adapted over.