

‘COST’ AND THE NOTION OF ‘EXPERIMENT’ IN ARCHITECTURAL DESIGN IN SRI LANKA - *Study with reference to factors effect in experiment in material usage in personalized houses in Sri Lanka.*

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Abstract

This research is an enquiry into architectural design and construction. The study looks at the personalized houses done by local Chartered Architects in Sri Lanka. It is an examination on how architects ‘experiment and innovate’. Key hypotheses for the research were; “Architects are not sufficiently involved in experimenting with building material and technology” and “the limited experimenting is mainly due to cost issues”. This sector receives the most active contribution from the professionals but the approaches are confined to a limited set of practice conventions. Therefore, this segment of the industry is identified as the most appropriate section to carry throughout the research. The study investigates the effects of ‘cost’ in relation to experiment and attempts to establish the notion of ‘experiment’ in architectural design process and practice in Sri Lanka. The study finds out the ‘factors limiting the experimentation’ in the field of architecture. The research carries out with a questionnaire survey and case study interviews. Both qualitative and quantitative analyses are made to analyse the factors affect in experiment in architecture and the most effective backgrounds in experimenting.

Keywords: *Experiment in Architecture, Materials and Technology, Building Process, Conventions, Cost*

1. Introduction

Based on the key hypotheses the study looks at the possible factors preventing and limiting experimentation in architecture. The final outcome of architecture is a ‘built product’. This ‘product’ is made using materials and technology. Experimenting is a way to deviate from the conventional and innovate in practice. In architecture, experimenting;

- Bring economic benefits to the building industry

- Expand existing knowledge and add new knowledge to the industry and its practices
- Leads to most responsive methods of building construction
- Leads to innovating, developing materials and technologies deviated from the convention
- Satisfy academic, intellectual curiosity and research.

In Building, any attempt to deviate from the standard modes of practice will have considerable cost implications. Surveys show that this has restricted experiment and innovation by the architect. The study intends to find out what key factors define the scope of their practices in engaging in experiment.

2. Background to the study

This research is formed on the inquiry into the importance of craft in architectural design and construction as propagated by William J Carpenter in *Learning by Building: Design and Construction in Architectural Education* (1997). Carpenter highlights the fact that the contemporary architectural practice is separated from the construction process and how this schism is preventing the evolution and innovation of the practice and the practices.

The main theoretical basis if the research is formulated on broad aspects related to architecture and building industry on the writings of Steven Groak – *The Idea of Building* (1992). The research hypothesis is formed around Groak’s frameworks of buildings and building processes.

Chartered Architect Vijitha Basnayake explains, “...*what we learn from the school of architecture is like the food we eat, we can name them and divide them in names. But, the outcome of it is ‘energy’, which we cannot describe in bits and pieces, architecture should also be like that.... You have to find a new thing out of what you have learned...*” (Basnayake, V, personal communication, February 8, 2015)

Architect Basnayake’s reasoning highlight the need to widen the scope of the experiment interventions in Architecture. Dr. Pathiraja sets out the wider parameters of architectural interventions thus; “*The ability to understand and negotiate differences in cultural and economic and eventually operative frameworks of building production, hence become the key success of any Architectural Design Intervention...*”(Pathiraja, M, 2014)

Both statements establishes the need for the architect to be responsive to a wider range of criteria and to innovate responding to those.

“Buildings are not achievements in individual entities. Social development, social cultural Infrastructure, Technical system, Material Investigation, Labour Training has become act of Flexible creative synthesis that brings problems and solutions...” (Pathiraja, M, 2014).

Within these arguments, architecture can be defined as a process that combines aesthetic and social issues with economy of means, tectonic research and sensory comfort.

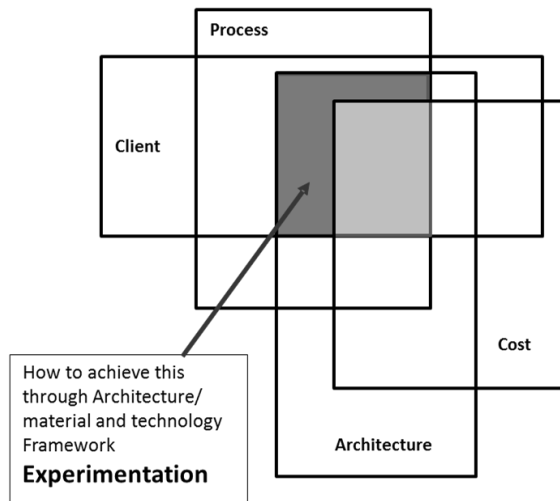


Figure 1: Building Process Framework

The scope of experiment in architecture is a matter of the behavior of the process, the client and the cost. This framework (Figure 1) provides the scope and limitations of experiment. The research intended to investigate the following in relation to architecture;

1. Investigate the Experimental approach to architecture
2. Investigate what is meant by architectural experiment in material and technology.
3. Find out the architectural community's perception about architectural experiment.
4. Find out about time – cost implications in Architectural Experiment.
5. Find out what are the advantages and benefits of experimenting?
6. Find answers to what makes architects' practice experiment.

3. Significance of the Study

The research acknowledges that experimenting is fundamentally to the advancement of the practice and the profession. It is also noted that there is limited research carried out within the field in relation to the research area. Hence, the research intends to gather knowledge in experiment in architecture.

The lack of awareness of the significance of the research area may also lead to vast amount of valuable knowledge 'getting lost' in practice. Raising awareness of the significance of experimenting as well as the benefits of doing the same may encourage and promote initiatives in that direction.

It is noted in the hypothesis that the material and technology application in architecture is limited to a convention. The reasoning for the above matter is mainly the cost effect. The intention is to find out the possibilities of building, responsive, innovative building in terms of materials and technology. Hence to find out the real factors effect in experimentation in architecture.

4. Methodology

This study is carried out 'combining qualitative and quantitative data to best understand and explain a research problem' (Creswell, 2002, p. 59) and therefore follows a 'Mixed Method Research' procedure.

The following methods were used to gather information and data for this study.

1. Pilot survey to find out general norms in relation to experimentation in architecture.
2. Survey on published architectural work to establish the convention and analyse the extents of experimentation carried out within the practice.
3. Selection of case studies and Interviews to analyse the factors effect and not effect in experimentation.

5. Findings and Data analysis

The study will conclude by summarizing the findings of the survey and answering the key questions.

6. Experiment in Architecture.

The research investigates implications in architecture in relation to experiment by looking at;

- Modes of interventions and the types of outcomes
- Where such interventions take place
- The significance of studying such interventions in experimental housing designed and supervised by individual practitioners.

7. Field Surveys and Case Studies.

The research reflects how certain architects have managed to engage in experiment in architecture within the current system and important features of their experience.

The research is carried out in four main stages.

1. Pilot survey and questionnaire
2. Survey on published architectural work
3. Selection of case studies and Interviews
4. Findings and Data analysis

8. Research Outcomes.

From the pilot survey the study finds out the factors effect in experimentation according to the general perception of the architects. Then the questionnaire survey provides data to make a hierarchy of the intensity of effects of the factors provided in the questionnaire.

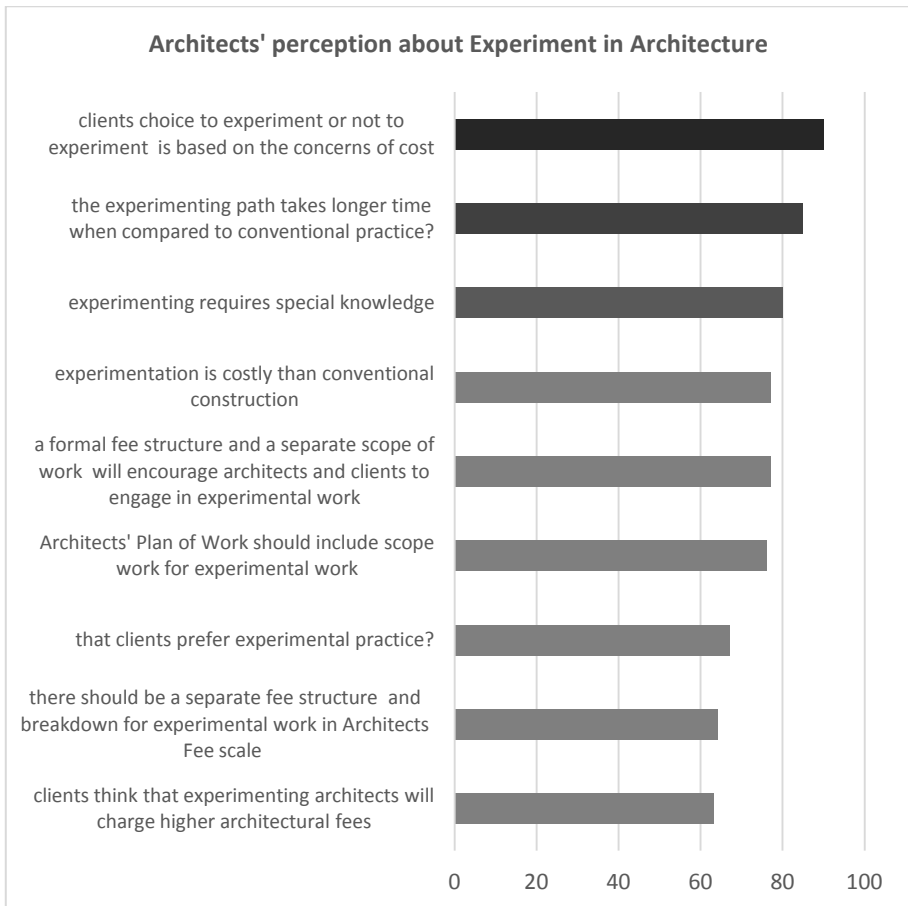


Figure 2: Architects' Perception about experiment in architecture
 Source: Author based on the responds from the questionnaire survey

The graphical representation above figure 2 shows that architects perception is that clients' choice of experiment is based on 'cost'. And also the time factor and the knowledge factor are the key elements that limits experiment in architecture.

'COST' AND THE NOTION OF 'EXPERIMENT' IN ARCHITECTURE

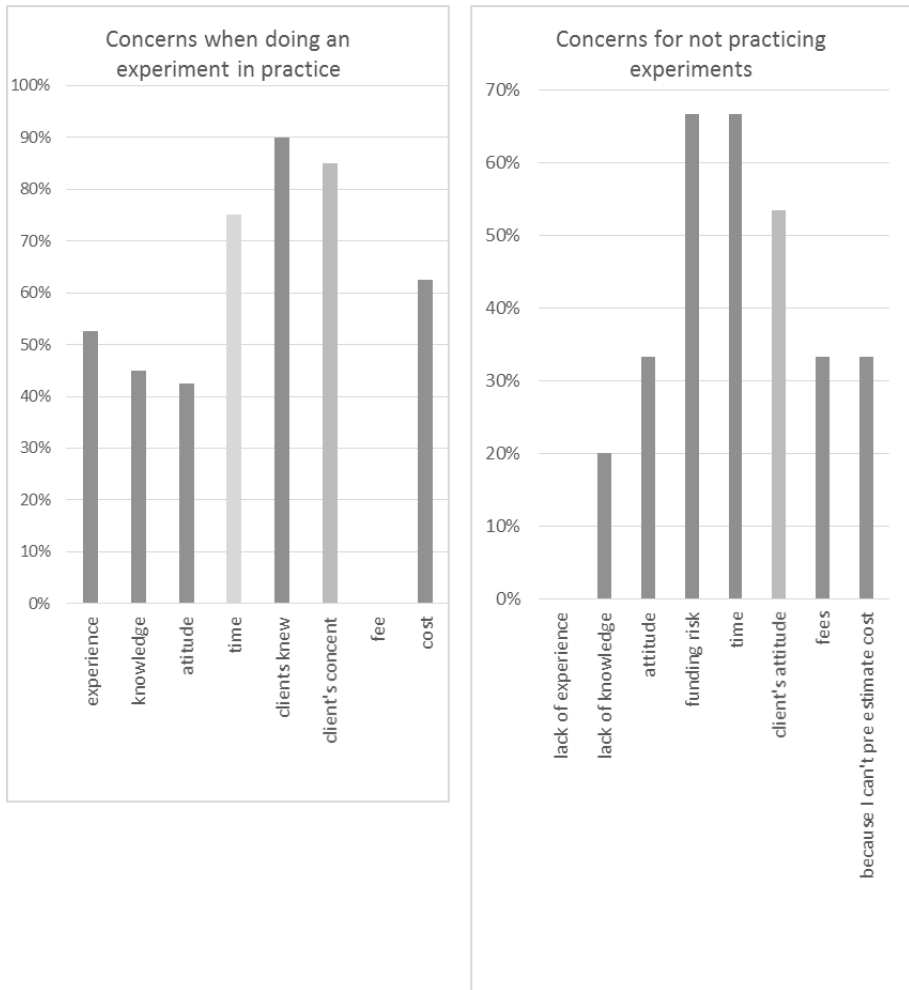


Figure 3: The Concerns in Experimenting
Source: Author based on questionnaire survey

However these graphs (figure 3) shows that the key factors for practicing experiments in architecture for the architects who have engaged in experiment are to save time with the clients' consent and the cost factor comes in fourth place. Here the architect's intention was to reduce the cost.

But the architects who say they are not practicing experimentation says the three main factors for not practicing experimentation are cost, time and clients attitude.

Those above results conclude that cost, time and client's attitude are the factors deciding experimentation in architecture or not.

This result lead the research to find out the other variables in experimentation in architecture.

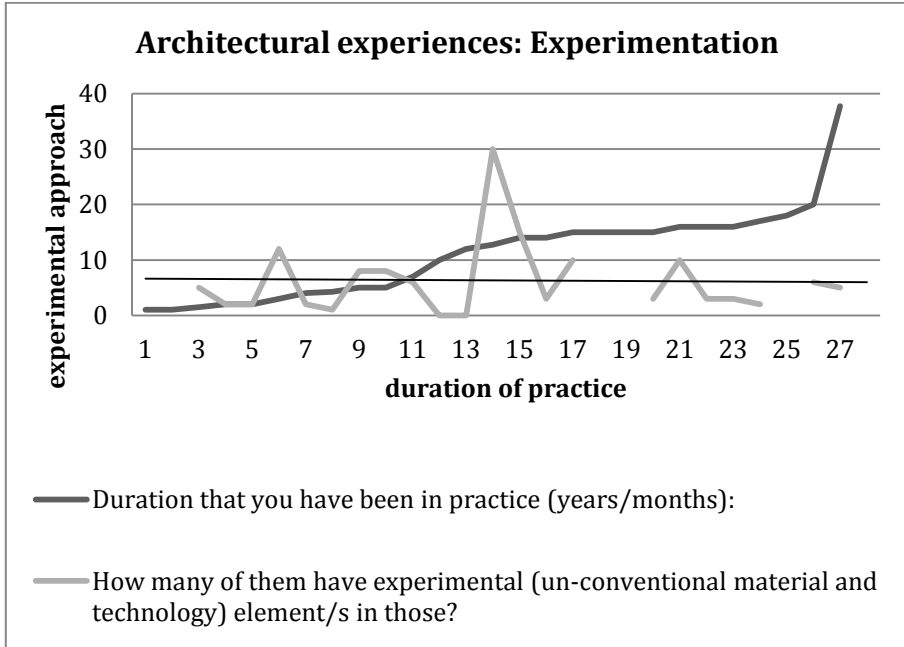


Figure 4: Architectural Experience vs. Experimentation
Source: Author based on questionnaire survey

The statistical analysis of the data collected from the architects show that frequency of experimentation decreasing with the duration of the practice (figure 4). The reasoning behind this was proved by the image survey also. Both shows that architects makes their own palette of materials and technology. Hence the experimentation limits up to making that palette. There after it is more of an applying the same palette in every design.

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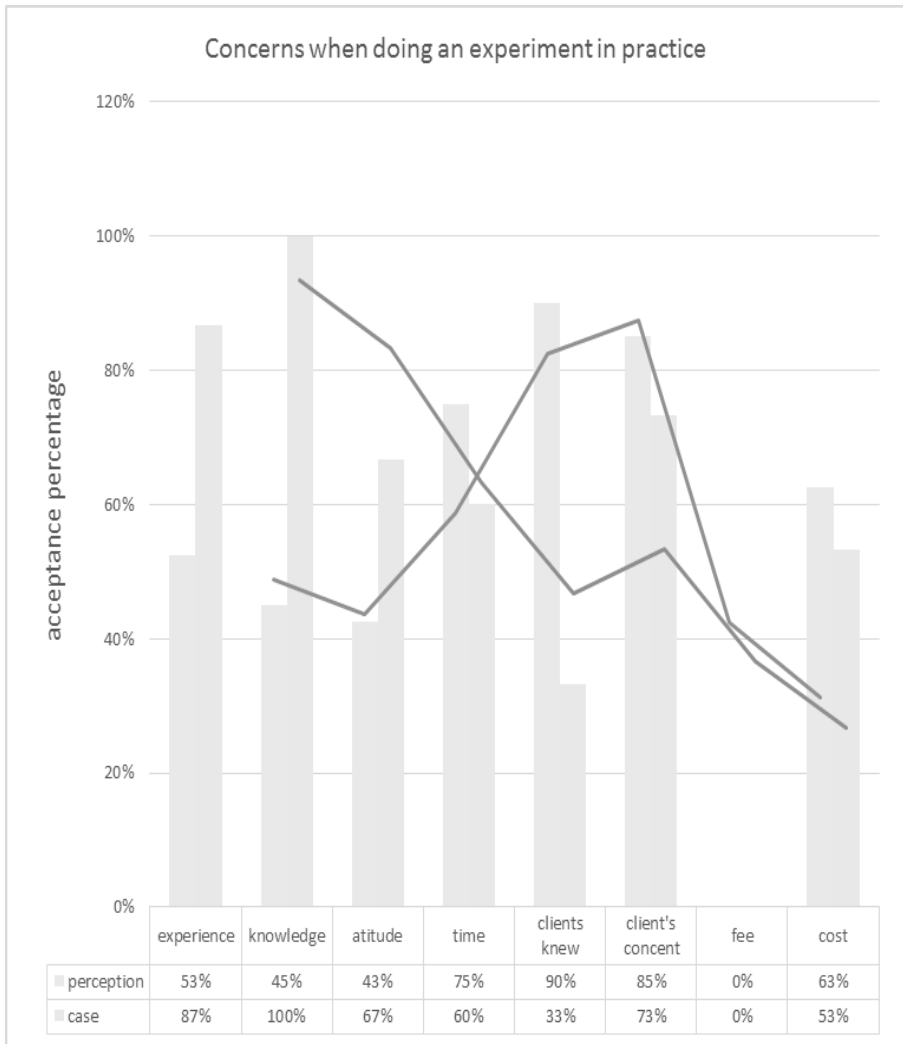


Figure 5: Experimentation concerns
Source: Author

With finding the key ‘limitation’ to experiment in architecture the statistical analysis shows the actual factors of experiment in architecture compared to the perception of the architects (figure 5).

This clarifies that the knowledge and architects’ attitude are the main factors of experiment in architecture. Architects should have material and technological knowledge in order to carry out experimentation and also they should be willing to explore experimentation with the practice (figure 6).

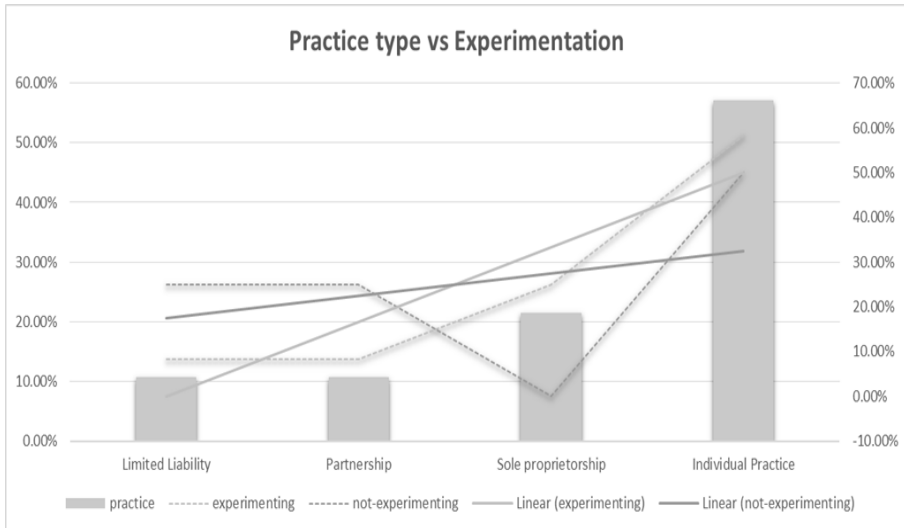


Figure 6: Practice type vs. Experimentation

Source: Author

9. Conclusions

The research findings answered key research questions and reviewed the effect on the architects Plan of Work against experiment mode of architecture. The final analysis of the study clearly showed that majority of surveyed architects believed that they 'did experiment' in practice. This was clearly reflected with the questionnaire survey findings where 83% of architects claimed that they do experiment and only 17 % claimed that did not experiment. This finding was based on their own perception of their work practice.

From the case studies, two out of three architects (67%) stated that they were experimenting and the remaining architect (33%) claimed that whatever he did, he did not consider that as experiment.

Therefore, in conclusion, it can be noted that on contrary to the claim in the hypotheses, 'that architects do not experiment' majority of architects believed that they did experiment in materials and technology.

The analysis of the image survey, carried out on the published projects however revealed that majority of architects continued to operate within conventional use of materials and Technologies confirming the claim that made by the research question. However, it can be concluded that image

survey was carried out with limitations as compared that of questionnaire survey and the case study survey.

From the questionnaire survey findings it can be concluded that majority of architects believed that experimenting was beneficial to the practitioners and to the profession. The majority who took the questionnaire survey indicated that cost and time as the key challenges and factors that discouraged experimentation. However, this finding was comprehensively disputed by the case study interviews. Those architects concluded that 'cost' was key determinant to engage in experimentation and the extension of time was not as critical as perceived. The gains on cost effectiveness seemed have off set the difficulties of time extensions incurred due to experiment.

The findings of the case studies indicated the considerable changes and variations to the standard, Architects Plan of Work, in relation to experimenting. However, most of these variations in architects extended scope and engagement occurred within the conventional building programme. The case study survey justified that extended involvement as an essential feature to the success of any experimental intervention although it was not supplemented with additional professional fee. It may be concluded that architects were aware of these facts from the inception of the projects and they continued to engage in experimenting without any monetary reward.

The findings of the study further indicated that experiment in architecture might be encouraged where cost limitations are critical. The experimental case studies justified this fact and established that greater cost benefits can be achieved with experiments, although these projects may require additional time to complete.

The case studies gave valuable insight to salient factors specific to experiment. These findings indicated that, for successful experimenting and to encourage experimenting, certain simple methods can bring positive outcomes. The study findings are concluded with the following list of ten key propositions to achieve a successful approach to experiment in architecture;

1. Develop a plan of work and a fee scale that can facilitate experiment in architecture
2. Carry out background studies
3. Keep the records
4. Before implementation, discuss ideas with the engineer and the builder
5. Educate the client about what you are going to do as 'experiment'
6. Pre-plan alternatives in case of an un-successful experiment

7. Pre-think about the maintenance process
8. Educate the client about the maintenance
9. Get feedback from the client
10. Execute the improvements immediately

Acknowledgements

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