

# INFORMAL CONSTRUCTION SECTOR AND ITS EFFECTS ON THE CONSTRUCTION INDUSTRY OF SRI LANKA

Joseph Lerociyan,  
Faculty of Engineering, University of Peradeniya  
Email: jlerociyan@yahoo

Thangaraj Jeevanarth  
Faculty of Engineering, University of Peradeniya  
Email: jeevanarthe07@gmail.com

Subramaniam Thushyanthy  
Faculty of Engineering, University of Peradeniya  
Email: thushy007@gmail.com

Pujitha Dissanayake  
Faculty of Engineering, University of Peradeniya  
Email: pujitha@civil.pdn.ac.lk

## Abstract

The objectives of this research are to study the informal construction sector in Sri Lanka, to identify the effects on construction industry and to propose suitable mitigation measures to minimize its effects on the construction industry. The informal construction was defined for this study as the construction works carried out without the use of formal construction agreements and construction works carried out by personal not having professional qualifications. This study was carried out via a questionnaire survey on a sample representing several provinces of Sri Lanka. Three separate types of questionnaires were prepared for respondents representing the public, professionals and non-professionals to ensure effective collection of data and the efficient data analysis. Prior to finalizing the questionnaire survey, a pilot study was conducted in order to get ideas and general opinions of the professionals and public through direct interviews. The questionnaire was prepared to identify whether the construction works fall into the category of informal construction and to find its effects on construction industry. The Significance Index was used to rank the factors that affect the construction industry and statistical software “SPSS” was used in this analysis. Research findings of this study were used to identify the effect of informal construction and to propose suitable mitigation measures to minimize its effects on the Sri Lankan construction industry.

**Keywords:** Construction Industry, Informal construction, Questionnaire survey, mitigation measures, Significance Index.

## 1.Introduction

The informal construction sector plays a vital role in the development of the economy and it recorded an average growth of 7.5% over the last 3 years [4]. Further in the Sri Lankan economy, construction is the fourth highest sector after services, manufacturing and agriculture. According to the Ministry of Finance and Planning, construction related projects worth over Rs.700Billion is planned for 2010-2012. Although certain contracts may be awarded to foreign principles, a substantial part of the work would be re-assigned (by way of sub contracts) to local contractors.

In addition to the large scale projects initiated by the state, it was estimated that construction projects worth a similar amount will be initiated by the private/informal sector. Accordingly the value of construction projects awarded to local contractors (including subcontracts) will increase annually by approximately 50-60% over the next 3 years [5, 7].

In Sri Lanka, the construction work is carried out by the following entities.

- Registered contractors of the Institute of Construction Training & Development (ICTAD)
- International contractors
- Unregistered local contractors

Hence, the informal construction sector and its effects are the important issues that need to be studied [3].The scope of this project was limited to housing constructions projects only.

The main objectives of this study were:

1. To identify the informal construction sector
2. To study the effects of informal construction sector on construction industry of Sri Lanka
3. To propose suitable measures to minimize the informal constructions.

## **2. Need of this study to the present context**

Most of the researches related to the construction sector in Sri Lanka have ignored informal constructions due to lack of data availability. But the effects of informal construction on the community and construction sector are quite substantial. Therefore this study is an attempt to investigate the informal constructions, effects, factors and mitigation measures.

## **3.Literature review and data collection methodology**

Researches have given different definitions for informal construction in studies carried out in foreign countries [1, 6, 8, 9, 13, 14 and 15]. In most definitions they were considered as illegal constructions. In some of these studies, they have focused on how it contributes to the construction industry, advantages and disadvantages of informal constructions and some measures to eliminate the ill-effects of them [1, 7, 8]. But no comprehensive study has been carried out on domestic informal sector in Sri Lanka. In the Sri Lankan context of building construction, there were no clear definitions on informal constructions.

In some of the studies carried out on the Sri Lankan construction industry, researches have clearly stated that due to the lack of data availability on informal construction, they have omitted this sector in their studies [2, 3, 4, 5 and 7].

Some studies reviewed the employment relationships and organizing strategies in the informal construction sector [14]. It has always been customary in many countries to employ a proportion of the construction workforce on a casual and temporary basis to cope with the variations in contractors' workload.

According to literature no past studies have been carried out in Sri Lanka related to this topic. Therefore, it was decided to carry out this study using a questionnaire survey. In order to prepare

the questionnaires some ideas from literature and also knowledge gathered from direct interviews were used. The methodology was developed to find out how the factors differ from the formal construction to informal construction. Questionnaires cover a wide range of settings to gather information about the opinions and behavior of individuals. As with other branches of science, a typical approach is taken to the design and execution of questionnaire studies. Achieving an adequate representative sample is another important issue. Questionnaire surveys are particularly reliant on the willingness of the subject to take part. Considerable effort is therefore required from the outset to ensure that the questionnaire is acceptable to the target population to maximize the response rate.

## **4. Questionnaire preparation and techniques used**

### **4.1 Questionnaire preparation**

Three different types of questionnaires were prepared to collect data from three different parties. Those Questionnaires cover a wide range of settings to gather information about the opinions of,

- a. Public/House owners
- b. Non-professionals
- c. Professionals

In preparing those questionnaires ambiguities, double negatives, leading questions, unfamiliar words and hypothetical questions were avoided and also questions were kept as short and specific and simple English was used.

#### **4.1.1 Pilot study to test the questionnaires**

It was essential to carry out a pilot study to identify any ambiguities in the preliminary questionnaire and to get an idea on the range of possible responses for each question. The layout of the questionnaire was also tested at this stage to ensure that people can navigate their way easily through the questionnaire.

Pilot study was conducted among a small sample in the industry. Subsequent to the pilot study, few changes were made to the preliminary questionnaire. The time taken to fill each questionnaire should be reasonable and acceptable. Since the respondent will not go through the whole questionnaire if it is going to take long time to complete.

The comments were collected from the 'feedback form' attached with the preliminary questionnaire. These feedback forms and preliminary questionnaires were carefully investigated to fine tune the questionnaire. A covering letter was also attached to give a brief introduction about the research and the details to the respondents.

#### **4.1.2 Increasing the response rate**

Increasing the response rate is also an important task in our methodology. To increase the response rate white, stamped envelopes were used with pre-paid addressed envelope for the respondent replies. A personal cover letter was also included with the questionnaire. Reminders were sent to non-respondents.

#### **4.1.3 Formulate the responses**

Questions can be divided into open-ended questions or closed questions. Open-ended questions are where the respondent is free to give his or her own response to a question. Closed questions are, where predetermined answers are given as choices. In this study mostly closed questions and few open-ended questions were included in the questionnaire. The main disadvantage of open-ended questions is that they take longer time to complete, and sometime they may be left unanswered. It is also more difficult to code the responses than closed questions. Closed questions are quicker to complete and easier to code. Responses can be presented as simple Yes/No choices or multiple tick boxes.

### **4.2 Questionnaire distribution**

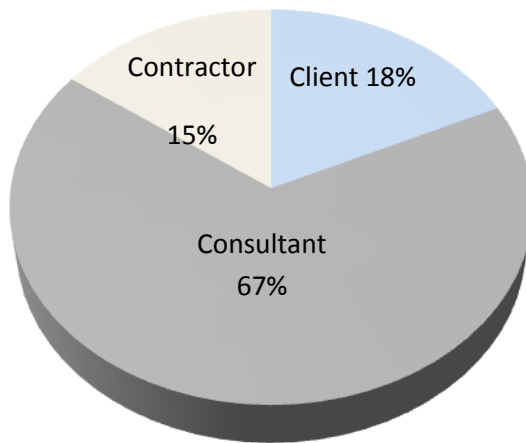
The professional questionnaire survey was carried out among 110 selected professionals. This survey was fully carried out via post.

Public survey was carried out among 120 house owners from the sample area of Batticaloa, Badulla, Ampara and Kandy districts covering municipal, urban and divisional secretariat areas. This survey was conducted by direct interviews.

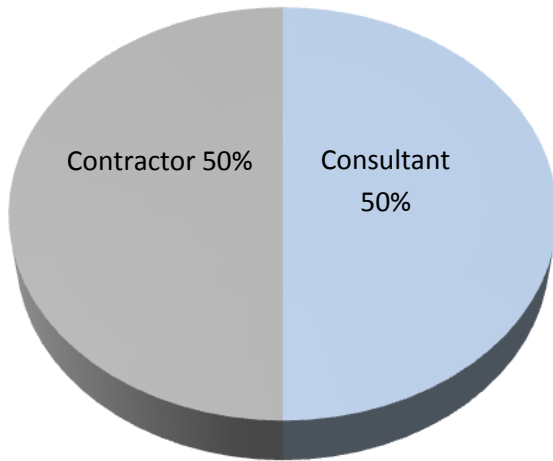
Non-professional survey was conducted among 30 no of non-professionals such as informal contractors, skilled labours etc. This survey was carried out via face to face interviews.

### 4.3 General characteristics of respondents

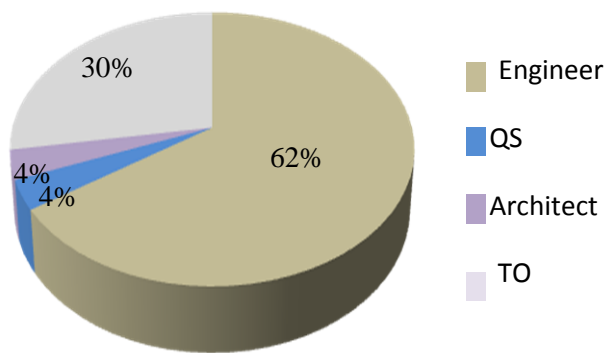
Out of 110 selected respondents, 58 have responded to the professional questionnaire survey. It included 8 clients, 39 consultants and 11 contractors, represented by engineers, architects, quantity surveyors and technical officers.



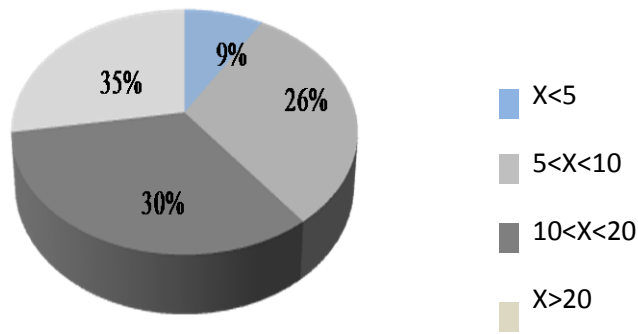
**Figure 1- Participation of respondents from the private sector**



**Figure 2- Participation of respondents from the government sector**



**Figure 3- Participation of respondents by employment type.**



**X = Experience of the respondents**

**Figure4-Participants of respondents by experience**

## 5. Data analysis

The ranking method used in this research had been used in similar in several studies with some necessary changes [16 and 17].

To rank factors, effects and mitigation measures, significance index was used.

$$SI = \sum a (n/N) (100/4)$$

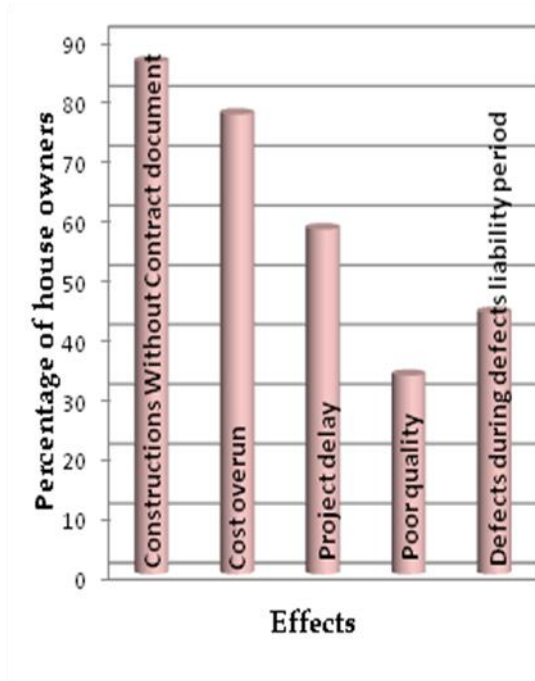
Where 'n' is the frequency of response, 'N' is the total number of responses and 'a' is the weight depending on the degree of significance indicated by strongly agree, agree, no clear idea, disagree and strongly disagree.

To compare the responses given by involved party as client, contractor and consultant, Spearman's Rank Correlation Index is calculated. For this purpose the Statistical Package for Social Science (SPSS) was used.

The data collected from the questionnaires were tabulated and the analysis was carried out by manually as well as using spreadsheets.



The Fig 6 represents the percentages of house owners who are engaged with the effects of informal constructions. These data were collected from the public questionnaire survey.



**Figure 6 - Results from the public questionnaire survey**

## 6. Ranking of factors and mitigation measures

No	Factors	Client	Consultant	Contractor
1	<i>There must be a contract document during the construction of the single house units</i>			
	<i>For luxury houses</i>	1	7	2
	<i>For semi luxury houses</i>	2	5	3
	<i>For normal houses</i>	3	12	5
2	<i>Without contract documents, clients (owners) may face problems during or after the construction</i>	4	1	6
3	<i>If there is a contract document, clients can take necessary legal action against poor work performance during the construction</i>	5	2	7

4	<i>Without a contract document, contractors may face many problems during or after the constructions</i>	<b>6</b>	<b>3</b>	<b>11</b>
5	<i>If there is a contract document, contractors have greater responsibility to assure quality and standard during construction</i>	<b>7</b>	<b>6</b>	<b>8</b>
6	<i>The contract documents should be made compulsory for all construction</i>	<b>8</b>	<b>9</b>	<b>4</b>
7	<i>The contract documents should be evaluated by the relevant authority to avoid problems during constructions</i>	<b>9</b>	<b>8</b>	<b>9</b>
8	<i>Not having contract document will lead to the following situations</i>			
	<i>Cost overruns</i>	<b>10</b>	<b>4</b>	<b>10</b>
	<i>Construction delays</i>	<b>12</b>	<b>10</b>	<b>1</b>
	<i>Poor quality standard</i>	<b>13</b>	<b>13</b>	<b>12</b>
	<i>Failure of construction works</i>	<b>15</b>	<b>14</b>	<b>14</b>
	<i>Liabilities after some period of construction</i>	<b>11</b>	<b>11</b>	<b>15</b>
9	<i>In Sri Lanka, the government rules and regulations should be modified to ensure that there should be a formal contract document for all construction works.</i>	<b>14</b>	<b>15</b>	<b>13</b>

**Table 1 – Ranking of factors about contract documents**

<i>No</i>	<i>Factors</i>	<i>Client</i>	<i>Consultant</i>	<i>Contractor</i>
<b>1</b>	<i>A qualified contractor should be employed for all types of Constructions</i>			
	<i>For luxury houses</i>	<b>1</b>	<b>2</b>	<b>1</b>
	<i>For semi luxury houses</i>	<b>2</b>	<b>3</b>	<b>2</b>
	<i>For normal houses</i>	<b>4</b>	<b>9</b>	<b>9</b>
<b>2</b>	<i>In case of repairs and part construction works, informal construction is acceptable</i>	<b>11</b>	<b>11</b>	<b>11</b>
<b>3</b>	<i>Without qualified contractors, the following factors will be affected</i>			
	<i>Completion within the estimated budget</i>	<b>5</b>	<b>7</b>	<b>3</b>
	<i>Completion within planned duration</i>	<b>7</b>	<b>5</b>	<b>5</b>
	<i>Completion with the expected quality</i>	<b>6</b>	<b>6</b>	<b>4</b>
<i>Increase in liabilities</i>	<b>8</b>	<b>4</b>	<b>6</b>	
<b>4</b>	<i>The knowledge of individuals or skilled labours are not sufficient for any type of construction</i>	<b>10</b>	<b>10</b>	<b>10</b>
<b>5</b>	<i>House owners are not employing qualified contractors due to their high service charges</i>	<b>9</b>	<b>8</b>	<b>7</b>
<b>6</b>	<i>Construction works carried out by professionals (Engineer, Architect, QS etc.) are always better than informal construction</i>	<b>3</b>	<b>1</b>	<b>8</b>

## 7. Conclusion

This research was carried out to study the informal construction sector in Sri Lanka, to identify the effects on construction industry and to propose suitable mitigation measures to minimize its effects on the construction industry. It was carried out through a questionnaire survey among construction professionals, non-professionals and public. The data collected from professional questionnaire were ranked using the significance index and correlation index according to the views of engineers, architects, quantity surveyors and technical officers as well as depending on the involvement type of party, i.e. client, contractor and consultant. Spearman's correlation Index was approximately equal to 1 for all combinations.

In case of public survey, the research shows that people don't know much about formal ways of construction and specially the involvement of professionals during their constructions. According to the public survey, 76.8% of house owners are afraid to have the involvement of the professionals due to their high profit margin. 72% of house owners experienced cost overrun. Therefore, this reveals that pre estimation was the main problem in informal constructions.

In the case of professional survey, the need for any questions on quality and pre-estimation does not arise. Profit margin was the determining factor of clients' decision on whether the construction is carried out as a formal or informal construction. According to professionals' point of view, using proper contract document and the involvement of professionals on construction is very important.

Following this study, it is recommended to form a relevant authority attached to local authorities' to approve the contract document, house plans and drawings. The consultancy process can be carried out through this authority for the supervision and approval of construction works. Also it is necessary to fix charges for the professionals who are involved in housing construction works and it should be based on the total estimated cost of the construction works. Demand for the Engineering professional input for housing construction works has reduced by the activities of informal contractors. Therefore, educating the public about the benefits of having formal construction is very important.

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