

# **An Investigation of Pre-Construction Problems between Building Clients and Designers: A Study of Lagos State, Nigeria**

**Martin Oloruntobi Dada**

Department of Building, University of Lagos, Akoka, Lagos, Nigeria.

**Moruf Bello**

Department of Building, University of Lagos, Akoka, Lagos, Nigeria.

## **Abstract**

The successful execution of a building project depends, on amongst other things, the nature of the relationship and understanding of expectation that exists between building clients and designers. The research presented herein seeks to investigate the problems between building clients and designers during the pre-construction stage. Data was collected from a randomly selected sample of building clients and designers in Lagos State. The data was subjected to severity index analysis and other inferential statistical analyses. The results indicated that building clients and designers acknowledge that there exist problems between them. Furthermore, it was discovered that there was no significant correlation and agreement in the ranking of the problems between building clients and designers. The study recommended that both the client and designer should strengthen their perceived areas of weaknesses and engage in more fruitful communication to address the issues raised in the study.

**Keywords:** Preconstruction Problems, Clients, Designers

## **1. Introduction**

A construction project is unique in that often times the participants in the procurement process are varied and multidisciplinary (Ward, 1979; Adindu, 2003; Bamisile, 2004). The participants range from the clients or project promoters, to the designers and contractors or constructors who may have varying and different objectives and loyalties to meet and satisfy. The participants may be different commercial entities each with their own idea and understanding of project success. The successful execution of a construction project depends on the degree to which the parties understand and accept and harmonise these objectives and loyalties.

Among the participants in the construction process, the client and the designers (excluding the contractor) meet earlier (except in collaborative or integrated project procurement strategies) at the initiation and conceptualization stage of the project. The client presents her requirements and brief which are then translated into design and other contract documents by the design team. The level to which the design tallies with the client's brief indicates - amongst other things - the level of understanding of the client's brief by the designers. It also signals an effective communication among them.

There are however instances where the client's and designers have problems among themselves regarding the project at any stage from the inception to the project commissioning stage. Al-Hammad and Al-Hammad (1996) investigated problems between building owners and designers in Saudi Arabia. Other works sought to investigate problems and relationships among project participants (Dalton & Dalton, 1976; Miles, 1996; Dozzi et al, 1996; Rahaman & Kumaraswamy, 2002). Some of these problems which may be relationship-centered can also affect even the choice and selection of designers for projects (Ling et al, 2003). However the studies of problems between building clients and designers were not conducted with the current research environment as the focus. This study therefore has sought to investigate and assess problems that ensue between clients and designers in Lagos State, Nigeria, and to rank them and ascertain whether there are significant differences in the perceptions of the two groups – clients and designers. In the process, a knowledge base would have been created regarding the environment of the research that can be useful in policy formulation and further research. The concepts and findings of the research can also be tested in other parts of the world to ascertain similarities and differences.

## 2. Research Methodology

The research was carried out in two phases. The first phase was the literature review that led to the identification of major problems between project participants. In the second phase, a questionnaire was developed using the aforementioned problems. Respondents were asked to assess on an ordinal scale the occurrence of problems between building clients and designers. The respondents were building client and designer organizations. The questionnaire sought to obtain the assessments of the owners and designers regarding the severity of the problems mentioned. The questionnaires were administered on a randomly selected sample of thirty (30) building clients or client organizations and forty (40) designers or designer organizations and were physically handed to the respondents. Twenty building clients (or client organizations) and twenty-one designers (or designer organizations) filled the questionnaires. An interviewer was available to answer questions relating to the questionnaire. An aggregated response rate of 58.7% was obtained. The data obtained from the survey were analysed using the severity index method after Al-Hammad and Al-Hammad (1996) and the Spearman rank correlation formula as enunciated in Levin (1987) and Gupta (2001). Out of the identified problems, those with severity indices of more than 50% were selected for further analysis. Thirteen of the identified problems were then selected for further analysis. The higher the severity index, the more severe the problem. The severity index (SI) expressed as a percentage is given by

$$SI = \frac{\sum w}{A \times N} \times 100\%$$

Where w = the weighting given to each factor by the respondents and ranges from 1 to 5 where 1 = least severe and 5 = most severe; A = the highest weight (in this case 5); and N = total number of sample.

## 3. Analysis and Results

Table 1 shows the rankings obtained from the severity index analysis

Table 1: Severity indices and rankings of identified problems by building clients and designers.

Identified Problems	Building Clients		Designers	
	Index %	Rank	Index %	Rank
Lack of accuracy in specification and working drawing	88.75	1	82.23	1
Slowness of clients' acceptance of final design	66.25	6.5	73.81	3

Poorly written contract agreement document between building clients and designers	68.75	4.5	71.45	4
Inappropriate selection of construction materials by designers	70.0	3	57.20	13
Designers' lack of awareness of availability of construction material	62.5	11	59.55	11
Continuous variation by building clients	75.0	2	69.10	6
Inappropriate size selection of some materials	65.0	8.5	61.88	9
Delay in completion of design at expected time	51.0	13	58.35	12
Clients' inadequate budget for design relative to his requirement	63.75	10	71.38	5
Clients' inadequate budget for construction relative to his construction requirement	61.25	12	66.70	8
Inaccurate estimation of cost of project	65.0	8.5	69.08	7
High cost of design to modify fees	66.25	6.5	59.58	10
Clients' desire to modify the use of space	68.75	4.5	78.61	2

Table 1 reports problems with indices of above 50% which were grouped as more severe or most severe depending on the percentage value. The table further shows that building clients rank 'lack of accuracy in specification and working drawings' as the most severe problem. From the building client's perspective, this was followed by 'continuous variation by building clients'. The third most severe is 'inappropriate selection of construction materials by designers. The table also shows that 'delay in completion of design at the expected time' is the least on the scale of the extracted problems. Designers on the other hand perceive 'lack of accuracy in specification and working drawing' as the most severe problem followed by 'clients' desire to modify the use of space'. The third in the table is 'slowness of client's acceptance of final design'. The least in the extraction of problems shown in the table from the designers' perspective is the 'in-appropriate selection of construction materials'. It is interesting that both groups view 'lack of accuracy in specification and working drawings' as the most severe problem. 'Lack of accuracy in specification and working drawings' has the potential of creating communication problems.

The next objective was to calculate the rank correlation of the severity ranking of the selected problems and find out if the correlation is significant. The formula for calculating the rank correlation is given by:

$$r_s = 1 - \frac{6 \sum d^2}{N^2(N-1)}$$

Where d = difference in rankings of the same issue by the two groups; N = number of items being ranked (pairs). Using the formula, the rank correlation coefficient obtained was +0.403.

It is worthwhile to test whether this value of  $r_s$  obtained is significant. As  $N$  is less than 30, unlike other small samples, the  $t$  – test cannot be used to test the significance of the rank correlation coefficient (Levin 1987). A feasible option, after the postulation of the null hypothesis, is comparing the calculated rank correlation coefficient calculated with the tabulated value for a two tailed test. The question then posed is: Do the rankings of the two groups correlate? To resolve this question, a null hypothesis was formulated thus:

**H<sub>0</sub>:**  $r_s = 0$  (There is no correlation in the severity ranking of the problems between building owners and designers).

The corresponding alternative hypothesis is:

**H<sub>1</sub>:**  $r_s \neq 0$  (There is correlation in the ranking of the problems between building owners and designers).

For a level of significance of 5% and for a two – tailed test, with  $N = 13$  the appropriate value of  $r_s$  is 0.5549. Comparing the calculated with the tabulated value of  $r_s$  reveals that the tabulated  $r_s$  is greater than the calculated  $r_s$ . ( $r_{table} = 0.5549$ ;  $r_{cal} = 0.403$ ). The decision is to: accept the null hypothesis that there is no significant correlation between the severity rankings of the problems between the building owners and designers. This implies that both building clients and designers do not agree in their ranking of the problems that are identified to possibly occur between them at one time or another during project execution.

#### **4. Discussion of Findings**

The findings of the severity rankings of problems between building clients and designers are illuminating and have implications. The results indicate out of a number of identified possible problems which are thirteen most critical from a severity analysis. Furthermore the two groups see ‘lack of accuracy in specification and working drawings’ as the most severe problem. This is understandably so, as the specifications and working drawings form part of the contract/project documents. Any problem in this area could become the seed for further problems in the future. In an industry where the regulation by law of the design and construction processes is at its infancy, the problem of ‘lack of accuracy in specification and working drawings’ can be appreciated. The professional bodies in the Nigerian construction industry under the auspices of the Association of Professional Bodies of Nigeria have finalized work on the draft national building code to be submitted to the national assembly for passage into law. It is hoped that the passage of the law would minimize the incidence of collapsed or abandoned buildings (Daily Independent, 2005).

The test of significance of correlation of the severity rankings suggests that there is no significant correlation between building clients’ and designers’ rankings. This finding has profound implications: the two parties do not agree significantly on the possible areas of problems. This thus results in a perception gap. The possible explanation and implication is that sometimes the two parties – clients and designers – are two different (and sometimes commercial) entities having different objectives to satisfy. It also implies and confirms previous assertions and studies that suggest that project participants often have differing priorities goals, objectives and loyalties. Yet the non-agreement in the rankings can lead to possible areas of misunderstanding and communication breakdown. Communication and mutual understanding is easier when there is commonality of understanding. This finding does not agree with that of Al-Hammad and Al-Hammad (1996). Perhaps the possible explanation could be the environment of the research. Such development could also be attributable to culture.

#### **5. Conclusion and Recommendations**

The study has revealed the severity rankings of possible areas of problems between building clients and designers. It has further revealed that there is no significant correlation or agreement in those rankings. A perception gap thus exists which if not bridged has the potential for breeding misunderstanding and

snowballing into flashpoints against successful project execution. In view of these findings the following recommendations are made:

1. Both clients and designers should take time to study their respective needs. Each party should also study the need of the other party so as to be able to appreciate each other's views.
2. In view of the non-agreement in severity rankings, it is suggested that clients and designers should have a forum for discussing their problems or perceptions together. Thereafter a consensus can be built and where necessary relevant trade-offs can be made. In essence teambuilding is advocated.
3. Each of the problems ranked as most severe should be further studied and investigated in detail to know their contribution to project problems and how to mitigate them.
4. Both clients and designers should strengthen their perceived areas of weaknesses.
5. This study can be replicated in other part of the world so as to facilitate understanding of other nations' construction industry. The outcome of such studies might be useful in the internationalization of construction knowledge and practice.

## References

- Adindu, G.O. (2003). "The Construction Engineer and Social Responsibility" paper presented at *Global 2003 – The 1<sup>st</sup> International Conference on Globalization and capacity building for the construction industry of developing Economies* University of Lagos, Nigeria, December 1 – 3
- Al-Hammad, A., and Al-Hammad, I. (1996). "Interface problems between building owners and designers". *Journal of Performance of Constructed Facilities*, Vol.10, No 3, pp123 – 126.
- Bamisile, A. (2004). *Building Production Management*. Lagos: Foresight Press Ltd.
- Daily Independent. (2005). "At last draft national building code ready" *Daily Independent* Monday July 4, pp. C4.
- Dalton, M., and Dalton, C. (1976). "Engineering teams can be OK". *IEEE Transactions on Engineering Management*, Vol EM 23 No 3, pp110 –115.
- Dozzi, P., Hartman, F., Fidsbury, N., and Ashrafi, R. (1996). "More stable owner contractor relationships". *Journal of Construction Engineering and Management*, Vol 122, No. 1, pp 30 – 35.
- Gupta, S.P. (2001). *Statistical Methods*. (13<sup>th</sup> ed.) New Delhi: Sultan Chand and Sons.
- Levin, R.I. (1987). *Statistics for managers* (4<sup>th</sup> ed.). New Delhi: Prentice Hall of India Ltd.
- Ling, Y. N., Ofori, G., and Low. S.P. (2003). "Evaluation and Selection of consultants for design – build projects". *Project Management Journal* Vol. 34, No1, pp12 – 22.
- Miles, R.S. (1996). "Twenty first century partnering and the role of the ADR". *Journal of Management in Engineering*. Vol.12, No. 3, pp 45-55.
- Mills, A., and Skitmore, M. (1999). "A comparison of client and contractor attitude to prequalification criteria". In. S.O. Ogunlana (Ed.), *Profitable patnering in construction procurement* (pp. 699 – 708). London. EFN Spon Ltd.
- Rahman, M.M. & Kumaraswamy, M.M. (2002). Joint risk management through transaction and efficient relational contracting. *Construction Management and Economics*, Vol. 20, pp45 – 54.
- Ward, P. A (1979). *Organisations and Procedures in the Construction Industry*. Great Britain: MacDonald and Evans Ltd.,