



UNDERSTANDING BUILDING PRICE FORECASTING BASED ON ORGANISATIONAL BEHAVIOUR

Yakubu Michael Zaki¹, Baba Adama Kolo², Yakubu Gimson Musa-Haddary³ and Ibrahim Biye Abdullahi⁴

^{1,2,3,4}*Department of Quantity Surveying, Ahmadu Bello University, Nigeria*

Public sector procurement laws require that building price forecast be established in-house at construction project initiation. Thus, building price forecasting is of significant importance within the context of organisational management and performance. Organisation performance is influenced by behaviours inherent in organisations. Hence, attempts at improving building price forecasting in public client organisations would require an understanding of the behaviours therein. Exploring the Robbins & Judge (2013) Organisational Behaviour model, this paper presents and discusses theoretical conceptions for understanding building price forecasting within public sector client organizations with a view to improving the process. The model conceptualises building price forecasting at the three levels of an organisation i.e. individual, group and organisation within the 'input-process-output' framework. The following aspects offer potential influences on building price forecasting: i) at the individual level – motivation, perception, and decision-making (processes); and task performance (outcome); ii) at the group level – structure, and group role (input); communication, leadership, politics and power, and conflict and negotiations (processes); cohesion and functioning (outcome); iii) at the organisation level – structure, and culture (input). The paper concludes by setting out an approach for more in-depth theoretical and empirical exploration to advance the frontier of research perspectives on building price forecasting in construction.

Keywords: building price forecasting, organisational behaviour, public sector client organisation.

INTRODUCTION

Globally, there has been outcry of poor performance of the construction industry in general and the delivery of their projects over budget in particular. Reports still go round that public sector projects are still not satisfactorily delivered. Confirming such report, Kirkham, (2015) laments that, '*Sadly several*

¹ yakuzaki2@yahoo.com

² babaadamakolo@gmail.com

³ gmusahaddary@gmail.com

⁴ ibrahim_abdullahi@hotmail.com

high profile construction projects in the UK have been plagued with problems over programme and budget. With public sector construction projects, strong emphasis is on meeting the budget; so when the project runs into difficulties, taxpayers and the media become rather unsympathetic.'

The underperformance has been adjudged to have direct link with unrealistic and reliable cost estimates the world over, (Eythorsdottir, 2012; Erdis, 2013). Essa and Fortune (2009) posits that such poor performance can be expected to be made worse by the government's policy of including sustainability features in its future publicly funded projects.

Hitherto, despite the theoretical studies on cost planning and control, construction projects still suffer from cost overruns, because of this some researchers have drawn different conclusions to rest on, human error (Ugur, 2007), planners optimism or promoters deliberately make optimistic forecast as a necessary means to getting projects approved (Bayram, 2013), poor cost estimation models (Eythorsdoltir, 2012).

Flyvbjerg (2013) posited that such unexpected deviations in construction costs cannot always be traced to only technical explanations. He suggested that if underperformance is attributable to issues of cost overruns and delays, then an improvement in accuracy could, over time be expected as estimators learned from their experiences.

The preceding situation has moved researchers in the field of construction to call for improvement in the quality and performance of cost advisers in the construction industries. For instance, Eythorsdottir (2012) posits that reliable construction cost forecasting is vital for successful accomplishment of any construction project. Bayram, Ocal, Laptali and Atis (2015) posit that, developing a method to produce accurate and realistic cost forecast in construction is still a problem that needs to be fixed.

Research problem

The Nigerian Construction Industry (NCI) is also having its share in the throes of poor performances coming as a result of the inaccuracy of building price forecast (BPF). NCI has numerous costs and time overruns reported in the industry, soaring between 40-300% and 25-500% respectively, (Olatunji, 2010; Olatunji, Sher & Gu, 2010; Ganiyu, Theophilus and Lateef, 2015).

Recent study by Zadawa, Shehu, Ahmed and Gambo (2017) posits that lack of compliance with the guidelines of the PPA 2007, and especially the unknown method by which organisations (especially Public Sector Client Organisations) come about the budgets for their building projects is one of the major contributors to poor performances of construction projects in Nigeria. While in terms of knowledge of the existence of the relationship between client organisation behaviours and BPF on the other hand, Suraj and Afeez (2016) asserts that there is lack of empirical evidence of BPF practices in the NCI. Williams and Berth (2016) further supports this position (without empirical evidence though) that there is lack of general knowledge on the process of formulating cost advice in the NCI.

Meanwhile, attempts to solve the problem has failed because most of the studies surrounding cost estimating focused mainly on the issue of accuracy and reliability, which are attributable to issues relating to techniques and methods (Jiang, Xu & Liu, 2013; Bayram, 2015; RICS, 2015; Bayram & Al-Jibouri, 2016; Abanda, Kamsu-Foguem & Tah, 2017). Studies by (Olatunji, 2010; Olatunji, Sher & Gu, 2010; Ganiyu, Theophilus and Lateef, 2015; Suraj and Afeez, 2016) largely considered the factors affecting the cost estimating but somewhat considered BPF outside the confines of organisation or project organisation as should be the case for construction projects, which Studies of organisation management, has long been considered useful in improving organisational performance, because of the perceived influence of the organisational parameters (human behaviour) on organisational performance.

Over time it has undergone some developments with specific approaches emanating there from e.g. classical approach, human approach, behavioural approach etc (Mullin, 2010; Walker, 2015). Hence, from an Organisation Management standpoint, considerations of BPF by most studies were mainly concentrated within the classical approach (e.g. Olatunji, 2010; Jiang, Xu & Liu, 2013; Bayram, 2015; Bayram & Al-Jibouri, 2016). Both the human and behavioural approaches, were minimally considered (e.g. Trost and Oberlander, 2002; Bowen, 2005; Aibanu and Pasco, 2007). The classical approach promotes techniques, methods and processes without giving much attention to the 'people aspect' which both the human and behavioural approaches promote (Mullins, 2010).

Hence, gaps in knowledge are thus created by the non-existence of knowledge of the nature of Public Sector Client Organisations (PSCO) relative to BPF and the nature of their BPF processes on the one hand, while on the other, the absence of knowledge of client organisations behaviour influence on BPF – all referred to in this research as the client organisations' BPF system. Thus, this research aims at investigating the influence of client organisation behaviours on BPF towards modelling the public sector client organisation BPF system with the view to proffering strategies for improvement.

The need for the study

There is the need for a greater understanding of how good quality building price forecasts have been formulated because it will contribute to construction industry clients making better quality business decisions. The CI having a greater understanding of the processes involved in the production of good quality building price advice would help solve real world practical problems faced by construction professionals active in the field. It is envisaged that if building price forecasting is done properly the issues of time and cost overruns will be properly managed thereby enhancing the performance of the CI; and improving the image of professional price forecasters (Akintoye, 2000; Fortune, 2007; Ali and Kamaruzzaman, 2010; Olatunji, 2010; De'Azevedo and De'Oliveira, 2012; Williams and Bert, 2016).

LITERATURE REVIEW

Literature has revealed that organisational theory consists of approaches to analysing social units of people that are structured and managed to meet a need, or to pursue collective goals. Three recognisable stages have trailed the development of organisational theories, namely classical, neoclassical and modern, Yang, Liu & Wang (2013) which have been developed into and variously explained in a four-approach category framework comprising of classical, human relations, systems and contingency (Mullins, 2010; Walker, 2015). The classical theory emphasises on purpose, formal structure, hierarchy of management, technical requirements, and common principles of organisation. The human relation theory gives more attention to social factors at work, groups, leadership, the informal organisation, and behaviours of people.

These approaches have influence in understanding organisations in the construction industry which provide a theoretical conception for the eventual study of client organisations. Such as work of Walker's (2007) reviews on '*organisations and the construction process*' and that of Mullins' (2010) on '*approaches to organization and management*'.

Mullins (2010) posits that organisations do not only work by focusing on the social aspect (though an important and critical component for success), the systems theory integrates both the classical and human relation approaches and promotes the importance of the socio-technical system while considering the organisation within its external environment. The contingency theory suggests that no one best organisational design in terms of structure, form and management is suitable for success but that success is contingent upon a range of situational organisation design variables.

While the majority of research in BPF have largely been driven by the classical theory (as shown above), modern day consideration of Organisational Management requires that such considerations should be driven by both the system and contingency theories.

The organisational theories and the conceptual theories of building price forecasting that lead to the research premise are well illustrated while the empirical literature of what scholars have discovered in practice is used to pinpoint and isolate the specific problem of the study and the knowledge gap it seeks to bridge. Having explored various approaches the study found system and contingency approaches fitting in the concept of the study as explained in OB model and Cost estimate model in figures 1 and 2. The models did not explain the lines of relationships therein, for instance, OB model only show that organisation comprises three types of variables i.e. inputs, process, and outcomes; operationalised at three levels of analysis present in all organisations namely: individual, group, and organisational structure; while, BPF model show that BPF is formulated by getting INPUTs, process the inputs then get the output. Hence, figure 3 explicitly show lines of relationships that fulfills theoretical framework for explaining the relationships between client organisation and BPF.

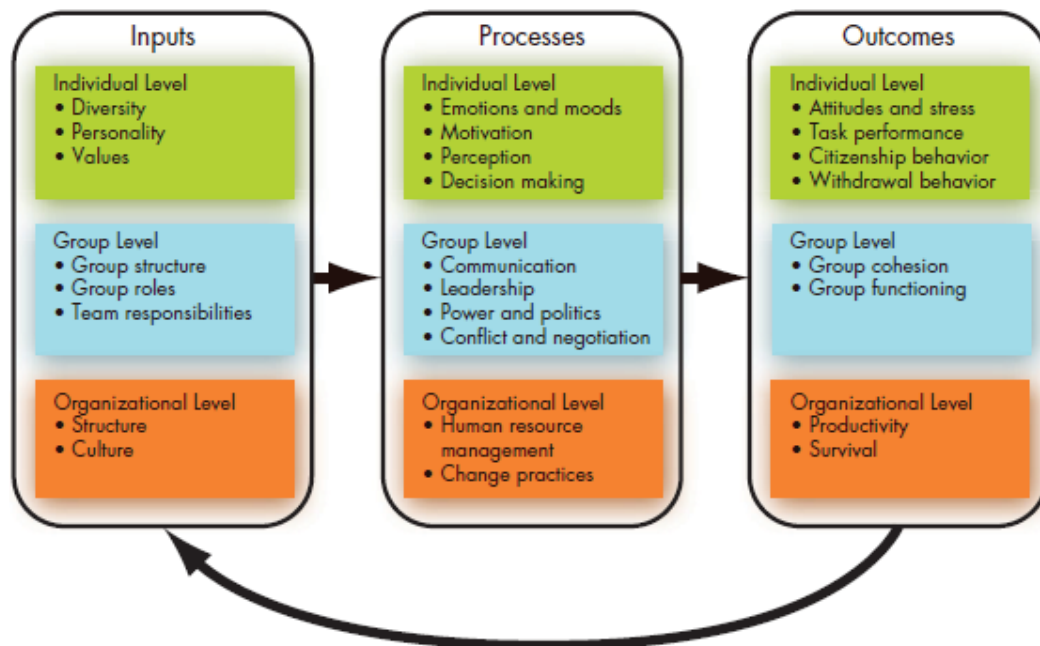


Fig. 1: A Basic OB Model source OB (Robbins and Judge 2013)

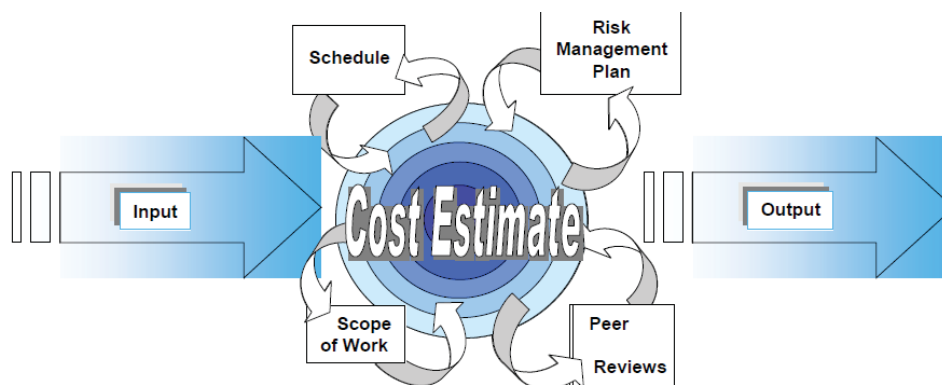


Fig. 2: Cost Estimating (BPF) Model Source: DOE Cost Estimating Guide 2011

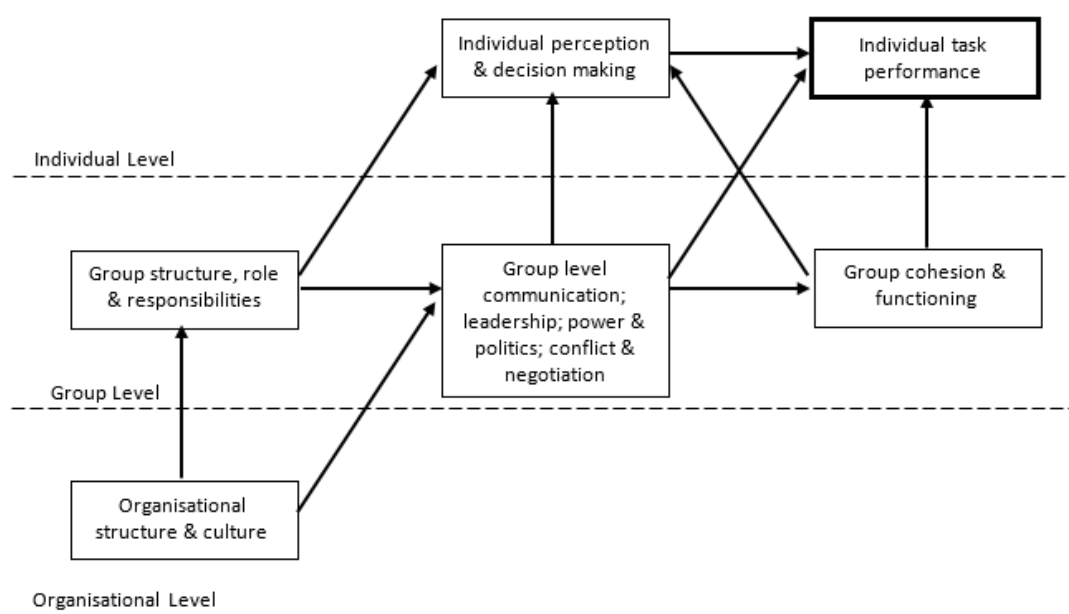


Fig. 3: Framework of the influences of the variables in an organisation

Theoretical Framework of the Study

For a relatively long period of time the concepts of the cost advice function of the quantity surveyors (QS) in terms of theories, principles and procedures; have largely revolves around consultancy services whereby the QS assumes an independent and impartial position in providing services to the industry. However, recent developments are challenging this position whereby in-house QS services are once again becoming popular and in demand. Two major support for this changing landscape in QS services is the increasing demand for cost advice in construction firms, Donald (2015) and the second, which is very instructive, is the changes initiated by the RICS to its approaches to the QS's cost advice services particularly the introduction of standards (new rules of measurement – NRM) for providing early stage estimates (RICS, 2011; 2013) i.e. NRM1 – the order of cost estimate (which wasn't a consideration before the coming of the NRMs i.e. 1, 2 & 3 in to the industry), which is the main outcome of any BPF system. The NRM3 also targeted at providing the means of forecasting cost maintenance of building, makes it and the NRM1 more client organisation orientated, hence further promoting and reinforcing the need for in-house QS services.

Having affirmed through literature search that BPF has link with organisation management and the Public Sector Client Organisations do their budgets in-house the study sought to know the process these organisations use in formulating the building price forecasting. This was necessary in order to get the knowledge of how the BPF were produced for client organisations. The essence of the building price forecasting process is to provide uniform guidance and best practices for use by public sector client organisation cost advisers.

DATA COLLECTION

Quantitative data were collected for the research sourced from professionals who participate in building price forecasting in Public Sector Client Organisations. The target population for the study comprised client organisations with their project team members (i.e Architects, Quantity Surveyors, Builders, and services engineers) being the unit of analysis. Sample of the population was drawn based on purposive sampling technique, reason for the choice being that a good BPF technique relies on competent judgement based on construction experience and knowledge. Hence participation is by design and not by chance.

Data analysis

Data on their own have no meaning unless the process of systematical application of statistical and/or logical technique to describe and illustrate, condense and recap, and evaluate the data is done – which is data analysis. Therefore, in pursuant to achieving each of the objectives in this study various analytical tools were used. To establish a theoretical framework for explaining the relationship between client organisation and BPF, two tools were adopted – descriptive statistics using questionnaire survey, and inferential using focus group discussion (FGD).

The descriptive analysis provided mean values, standard deviations and percentages in arriving at the BPF processes and professionals roles as obtained in practice in the NCI. The focus group discussion verified the acceptable processes steps by the academia. Establishing the nature of relationships and the influences between client organisations and BPF variables was achieved by using Spearman correlation coefficient, and Pearson's correlation for the analysis, while to establish the extent of the relationships and the influences multiple regression technique was used. The multiple regression technique was also useful in predicting the forecast outcome.

RESULTS

Table 1: The table comprised perceived steps of BPF process as drawn from textbooks seeing that there were no clear steps in any of the textbooks except the 12 STEPS drawn by Government Accounting Office (GAO, 2010) and adopted for use by Department of Energy (DOE) in 2011 in the United State. 17 steps were perceived but 5 imaginary steps were added to test the respondents' knowledge if they are conversant with them. The table shows the respondents accepted all the steps none was rejected completely. Six of the steps were accepted 100% all others got unaccepted figure. These indicated that most of the steps are not known by most of the respondents. Such result shows that there is no common steps use in NCI.

Table 1: Part selection of forecasting steps process (Please note: 'forecast' and 'estimate' are used interchangeably, having the same meaning)

S/N	Perceived Forecasting Steps	N	Yes	No
			1	2
1	Establish level of details required in the forecast	40	100%	0%
2	Make formal request for forecast	40	95%	5%
3	Collect, clean & analyse cost data	40	100%	0%
4	Qualify estimate (in terms of excludes)	40	90%	10%
5	Determine type of estimate required e.g. preliminary, viability etc	40	100%	0%
6	Gather relevant project information	40	100%	0%
7	Determine value for money for the client	40	62.5%	37.5%
8	Prepare the estimate	40	100%	0%
9	Consider project factors (including uncertainties)	40	95%	5%
10	Select, adjust & apply cost data/info	40	97.5%	2.5%
11	Apply necessary skills, expertise and judgment	40	80%	20%
12	Select price estimating methods e.g. functional, superficial etc	40	97.5%	2.5%
13	Identify client's needs & objectives	40	82.5%	17.5%
14	Monitor and review estimate	40	97.5%	2.5%
15	Check governance policies	40	90%	10%
16	Scan and understand available information	40	95%	5%
17	Consider factors affecting accuracy of estimate	40	70%	30%
18	Establish desired accuracy level	40	97.5%	2.5%
19	Communicate the estimate	40	100%	0%
20	Determine purpose of forecast	39	94.9%	5.1%
21	Consider factors affecting selection of estimate methods	40	55%	45%

Table 2: Organisation highest influence on BPF process

S/N	Perceived Forecasting Steps	N	The QS	Group or Team	The Organisation
			1	2	3
1	Establish level of details required in the forecast	40	47.5%	15.0%	37.5%
2	Make formal request for forecast	39	5.1%	7.7%	87.2%
3	Collect, clean & analyse cost data	40	97.5%	0%	2.5%
4	Qualify estimate (in terms of excludes)	40	85%	5%	10%
5	Determine type of estimate required e.g. preliminary, viability etc	40	70%	5%	25.0%
6	Gather relevant project information	39	71.8%	28.2%	0%
7	Determine value for money for the client	31	32.3%	61.2%	6.5%
8	Prepare the estimate	40	97.5%	2.5%	0%
9	Consider project factors (including uncertainties)	39	74.4%	12.8%	12.8%
10	Select, adjust & apply cost data/info	40	100%	0%	0%
11	Apply necessary skills, expertise and judgment	33	81.8%	15.2%	3%
12	Select price estimating methods e.g. functional, superficial etc	40	100%	0%	0%
13	Identify client's needs & objectives	37	13.5%	43.25%	43.25%
14	Monitor and review estimate	40	77.5%	12.5%	10%
15	Check governance policies	39	30.8%	43.6%	25.6%
16	Scan and understand available information	40	72.5%	7.5%	20%
17	Consider factors affecting accuracy of estimate	30	96.7%	3.3%	0%
18	Establish desired accuracy level	40	62.5%	7.5%	30%
19	Communicate the estimate	40	65%	35.0%	0%
20	Determine purpose of forecast	40	35%	17.5%	47.5%
21	Consider factors affecting selection of estimate methods	27	96.3%	0%	3.7%

Table 2: The table sought to find out who the respondents feel is responsible for carrying out each of the steps' function. The result shows the respondents had undivided opinions only on numbers 10 and 12 given the steps' function 100% to the QS. The overall picture gives QS the major participant in the BPF process as the QS got highest percentage ranging from 62.5% – 100% in 15 steps apart from 'establish level of details required in the forecast' which has 47.5%. The grey area is seen in the proportion of responses on the issue of 'identify client's needs & objectives' 43.25% of the respondents were of the opinion that is the 'group or team', and the 'organisation' that influence the step. This perhaps depicts the notion that 'client's needs and objectives' are inclusive in the brief

and not a step on its own since both the group or team and client are involved at the brief stage.

FINDINGS

1. Literature review proves that relationships exist in organisational parameters for building price forecasting.
2. Literature shows that the way building price forecasting are formulated in Nigeria Construction Industry and especially in the Public sector client organisations are not documented. This shows that every organisation does its building price forecasting in the way that is acceptable by their organisation.
3. The ambiguity found in the responses in questionnaire survey proves there is no documented model for building price forecasting in Public sector client organisation in Nigeria construction industry.
4. There is no clear knowledge of how building price forecasting are done in Nigeria construction industry.

CONCLUSION

The study suffices that the conventional theory that BPF is solely dependent on the professional technicalities of the specialized competencies to the exclusion of other influences such as organizational behaviours (parameters) and environmental factors is debunked; and that having proper knowledge of the organisational parameters that also influence the processes and outcome of the BPF system will increase the efficacy of the system. In furtherance to establish the extent of the relationships and the nature of influences, multiple regression technique will be used. The multiple regression technique will also be useful in predicting the forecast outcome.

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