Contractor Selection Criteria: A Cost–Benefit Analysis

S. Thomas Ng and R. Martin Skitmore

***Abstract*—This paper describes an empirical study aimed at ranking prequalification criteria on the basis of perceived total cost–benefit to stakeholders. A postal questionnaire was distributed to 100 client and contractor organizations in Australia in 1997. Forty-eight responses were analyzed for scores on 38 categories of contractor information in terms of "value to client," "contractor costs," "client costs," and "value for money." The client and contractor responses for "value to client" and "client costs" of processing were found to be homogeneous. Those for "contractor costs" and "value for money" differed significantly between the clients and the contractors. A simple linear regression analysis was used to model the responses, and an index of cost–benefit was derived for each of the categories. This was found to be superior to all of the nonlinear alternatives examined. The model was also found to have greater intuitive value than the equivalent raw "value for money" responses.**

***Index Terms*—Contractor selection, cost–benefit analysis, criteria, postal questionnaire survey, prequalification.**

I. Introduction

CONTRACT bidding is an expensive process for both clients and contractors, especially when many bidders are involved. Clients incur costs in screening and analyzing the bids tendered, whereas contractors incur costs in bid preparation and submission. Because contracts are awarded to only one contractor under normal circumstances, bidders have to recover the costs associated with every unsuccessful bid through the increase of subsequent bid prices. As a result, the entire cost of bidding is ultimately borne by the clients.

To prevent wasted effort in preparing and tendering bids and to avoid the consequent escalation in bid prices, it is common practice for engineering managers to select and invite a small number of contractors to bid for a project. Contractor prequalification aims to reduce the cost of bidding, while retaining the benefits of pure competition, by screening according to predetermined nonprice criteria. According to the HM Treasury [1], a professionally handled prequalification saves time and money for all parties because only suitably qualified contenders should be included in a list from which bidders will be selected.

Contractors selected to tender bids should be capable and suitable for the project, because the selection of an incompetent contractor may lead to delays, disputes, and even determination. When nominated subcontracts are necessary, the engineering manager should ensure that the named subcontractors are capable of completing the job satisfactorily; otherwise, they could jeopardize the productivity and quality of the entire project [2]. In some building projects, such as office schemes, the mechanical and electrical (M&E) components can be as much as 50% of total project cost, and the M&E works are considered very high-risk items [3]. The risk of employing an incapable engineering subcontractor will then be borne by the main contractor [4], which will in turn be passed on to the client. Contractor prequalification could eliminate some inherently incapable contractors from being invited to participate in the project bid.

Merna and Smith [5] recommend prequalifying contractors based on their financial, technical, managerial, and resource capabilities. Many researchers have, however, suggested that the exactitude of prequalification decisions may be improved by examining additional decision criteria, such as health and safety, quality assurance and control, and so on [6], [7].

Although contractor prequalification is intended to reduce bidding costs, it has the potential to become costly to the point of being counterproductive as more and more decision criteria are introduced into the process. For clients, these costs include those involved in defining the standard for assessment, preparing and printing the prequalification documents, obtaining information (either directly from the contractor or indirectly from external sources, such as financial databases, referees, banks, etc.), storing the information, interpreting the information, finding and summarizing useful information, applying the information to the assessment model, analyzing and assessing information, and making decisions for each application. The contractors' costs include those involved in collecting the required information internally or externally (e.g., from the bank), reorganizing information to the format required, planning, checking, typing, presenting, printing, submitting, and explaining the information to the client.

There is a need to ensure that the contractor prequalification process is efficient in its costs of operation. In the past, studies of contractor prequalification have concentrated solely on the benefits to clients. All decision criteria and associated contractor information considered relevant to contractor prequalification are proposed for inclusion in the assessment. However, certain decision criteria may only provide limited benefits to the client while involving clients and contractors in considerable costs in their collection, preparation, and evaluation. Such criteria, we argue, should not be included in the prequalification process. What is preferred is the use of decision criteria that significantly support the prequalification decision while costing little to the client and contractor in their application. In short, it is expected that the benefits gained from improved prequalification decisions exceed the costs involved.

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Of course, collecting hard data relating to the actual benefits and costs involved in prequalification is difficult, if not impossible, to do on a large scale. Gaining subjective impressions from those regularly involved is less of a problem as well as having the advantage of incorporating some aspects of utility. Some difficulties do arise in the analysis, though, for as will be seen, it is uncertain to what extent subjective benefits and subjective costs may be traded. The result is a relative, rather than an absolute, assessment in which criteria can be rank ordered for their cost–benefit efficiency. Though not achieving the ultimate goal of identifying the cutoff point where the introduction of additional criteria ceases to be productive, the work does nevertheless suggest an approach that may represent a significant step toward this goal.

II. Previous Studies

For most companies in practice, the prequalification criteria are merely a list of unwritten rules [8]. Even for those with more formal systems, the criteria in use have been developed in an *ad hoc* way [9]. This has encouraged several researchers to seek a standard set of criteria [10]. Most of this work has been descriptive, rather than the more usual prescriptive–normative approach to construction standard setting, through the empirical analyzes of the criteria that have evolved in practice. The argument is that if these criteria are identified and their levels of importance determined, the development of an objective quantitative selection framework could be facilitated [7].

The pioneering work of Russell and Skibniewski [6] in the United States identified five levels of prequalification criteria: 1) references, reputation, and past performance; 2) financial stability; 3) status of current work programs; 4) technical expertise; and 5) project-specific criteria. Holt *et al.* [7] also identified five general prequalification criteria in a survey of U.K. contractors: the contractor's organization, financial considerations, management resource, past experience, and past performances. In a study conducted in Australia, Liston [8] identified seven criteria as applicable to the selection of the right contractor: past performance, business location, capacity, financial, resources, procedures, and quality assurance.

Other prequalification criteria that are considered relevant to the prequalification of contractors include location, technical and managerial expertise, type and size of the contract, contractor's current workload, past experience in terms of the size of the project completed, management resources, and past experience in a particular region [7], [11].

The most recent research has been focused on the identification of a set of universal criteria for prequalification and the means by which different emphases can be accommodated to suit the requirements of clients and projects [9], [12]. This has found that all clients use what is implicitly the same type of criteria, but vary in the way they quantify the criteria, with most having to resort to a very subjective assessment based on information provided by the contractors. Hatush and Skitmore [9] proposed an explicit set of criteria, which subsumes all of the criteria identified previously, and they arranged to facilitate a more objective assessment of contractors both in prequalification and in bid evaluation. This comprises five main criteria relating to the contractors' financial soundness, technical abilities, management capabilities, safety performance, and reputation. These are further subdivided into subcriteria, which form the basis for establishing the main criteria.

Other researchers [7], [8], [10], [12]–[14] have tried to establish the importance of the decision criteria for contractor prequalification through empirical surveys. These surveys served two purposes: 1) to index the sequence of the assessment or to use as weighting factors during multiple-attributes assessment, and 2) to establish which are the most important criteria that clients should include when prequalifying contractors. All of these research studies have concentrated exclusively on the benefits to the client by formalizing the decision criteria.

One empirical study in the United Kingdom has investigated the importance of decision criteria to the contractor [12] by examining the differences in perceptions between the contractors and the clients on the importance of each criterion. The results of the correlation analysis indicated that the contractors' perception on the importance of criteria was positively correlated with their clients, suggesting that the contractors acknowledged the benefits of these criteria to their clients.

A recent report published by the Chartered Institute of Building [15] has also considered the benefits to the contractors in contractor prequalification. The report recommended that contractors' marketing efforts should be directed only at certain prequalification factors, such as "general experience and reputation," "financial standing and record," "quality assurance registered," and "prior business relationship." The report also urged the contractors to produce advertising brochures illustrating successful, well-known projects, longevity, and financial stability. However, the report did not consider the cost of producing this information and the value of this information to the client.

Liston [8] has also advocated considering contractors' view when prequalification criteria are compiled. This could help to ensure that only those decision criteria that are cost-effective to the clients are selected. When the Construction Industry Development Agency [16] was establishing the standard prequalification criteria for contractors and subcontractors, views were solicited from the contractors. However, this was done in only a very cursory way.

No direct studies of the costs, perceived or otherwise, of contractor or client involved in contractor prequalification have been reported.[1]

III. Cost–Benefit Analysis

One possible way of identifying appropriate decision criteria is by cost–benefit analysis. Given all other feasible choices, a decision criterion that provides the maximum amount of benefit or satisfaction, after considering the respective costs, should be selected for prequalification. In fact, the process of choosing the alternative that maximizes net benefit is so fundamental that often it is accepted as the very definition of human rationality. Becker [17] has argued that the concept of rationality implies that an individual, having understood the relative bene-

[1]The major findings of previous research studies in prequalification criteria are illustrated in Appendix I.

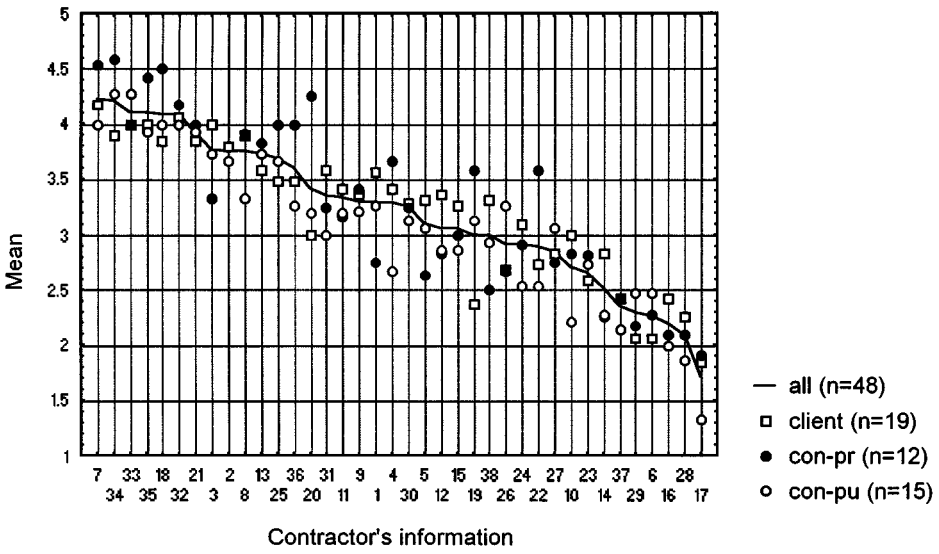

Fig. 1. Value to client.

fits and costs of different alternatives, chooses the one that has the maximum benefit in relation to cost. The principle behind the cost–benefit analysis is to choose the alternative with the highest net benefit, i.e., the difference between total costs and total benefits [18].

Pareto [19] has advocated that Alternative A is better than the existing situation if at least one individual received greater utility from A, and no one receive less utility. This concept, now referred to as Pareto optimality, is defined as the state of the economy in which no one can be made better off without making someone worse off. The term "better off" represents an increase in utility, and "worse off" represents an increase in disutility. There are many kinds of nonmonetary or unpriced benefits, and they all provide utility. The cost–benefit analysis attempts to measure and include all of them.

In addition to measuring the difference between the benefits and costs when choosing among alternatives, cost–benefit ratios may also be considered. In many cases, the use of the net benefit approach or cost–benefit ratio may lead to the same conclusion. However, a conflict may arise when there is a difference in the scale of operation. Although cost–benefit ratios are of intuitive value and are often used in the personal decision-making process, the analytical literature seems to be unanimous in its preference of the net benefit approach over the ratio method.

IV. Data Collection

A postal questionnaire was designed to examine the benefits and costs of the decision criteria being used for contractor prequalification (see Appendix II). The questionnaire comprised two parts. The first part was to assist the researchers to understand the background of the respondents. The second part of the questionnaire aimed to elicit the attitudes of the respondents on the 1) value to client, 2) contractor costs, 3) client costs, and 4) value for money of the 38 predetermined contractors' information (CI) categories (see Appendix III). The decision criteria were compiled according to the recent literature [8], [9], [12], [16]. A nominal scale of 0–5 was provided for representing the costs and values of different criteria, 5 being the highest and 0 being the lowest. The questionnaire was piloted by four internal and external experts on contractor prequalification. Their comments were incorporated in the final version of the questionnaire.

The questionnaire was distributed to the clients and contractors in Australia. A sample of 100 organizations was selected for this survey. The sample included 36 public clients from different states in Australia and 64 contractors in Queensland. The client sample included all identifiable public clients from different states in Australia. The selection of public sector clients for the study was due to their knowledge and experience in prequalification because all public clients in Australia have established procedures for prequalifying contractors. One major criterion for selecting the contractor sample was that all contractors should have the *a priori* knowledge in prequalification and CIs. Contractors on the government's approved lists will satisfy this criterion. Approved lists of different project categories and price ranges were obtained from the Queensland Government in Australia, and the sample was randomly drawn from the lists provided.

The questionnaire was sent to the selected organizations in November 1997, and a reminder was forwarded to those who did not return the completed questionnaire. Forty-eight organizations, including 19 clients and 29 contractors, returned the completed questionnaire, representing the return rates of 52.8% and 45.3%, respectively.

V. Analysis

A. Mean Responses

The responses were divided into three groups: 1) clients, 2) contractors with a higher proportion of work for public clients (*con-pu*), and 3) contractors with a lesser proportion of work for public clients (*con-pr*). The mean values were calculated of the "value to client," "contractor costs," "client costs," and "value for money" ratings for each of the 38 CIs for the three groups. These are shown in Figs. 1–4 together with the total responses (all) and ranked ordered according to the mean total responses.

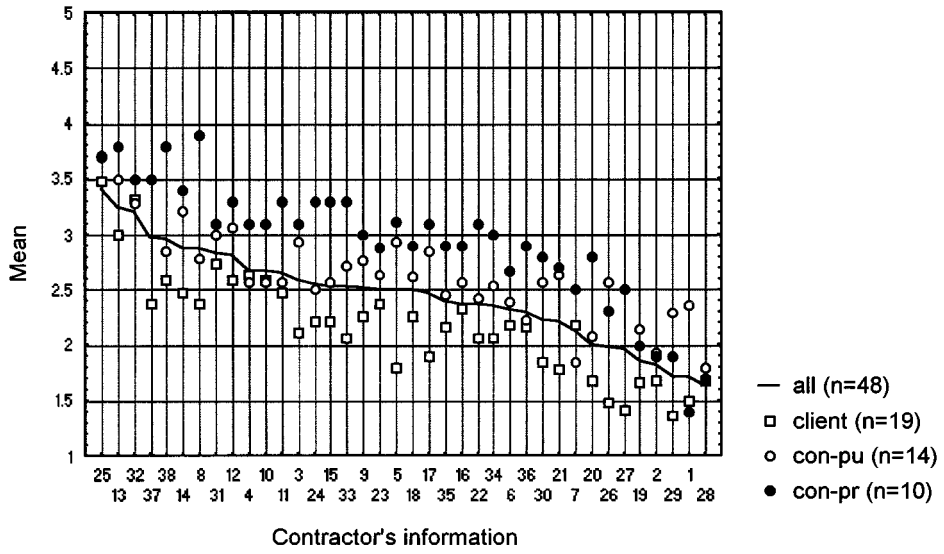

Fig. 2. Contractor costs.

All of the figures provide visual evidence of differences among the client, *con-pr,* and *con-pu* groups' mean responses.

1) Statistical Analysis: A series of one-way analyzes of variance (ANOVA) was carried out to test the significance of the differences in the mean responses among the three groups of respondents for all CI categories. The following significant differences (at the 5% level) were found:

Value to client	CI-19	(geographical knowledge)
Contractor costs	CI-5	(claims history)
	CI-8	(details of accredited quality scheme)
	CI-17	(frequency in submitting bids)
	CI-27	(number of professional staff)
	CI-33	(qualifications and experience of managerial and technical staff)
	CI-37	(research and development undertaken)
	CI-38	(results of quality audit reports)
Client costs	CI-34	(relationship with client)
Value for money	CI-1	(amount of outstanding contracts)
	CI-2	(annual turnover of company)
	CI-3	(balance sheet data)
	CI-4	(cash flow forecast of project)
	CI-10	(details of environmental policy).

A further series of one-way ANOVAs was conducted to test the significance of the differences in the mean responses of *con-pr* and *con-pu* for the CI categories. One difference was found and that was the value for money CI-4 (cash flow forecast of project), which was rated much higher than by the *con-pr* than by the *con-pu* respondents.

2) Discussion: The major differences in the three groups occur in the perception of "contractor costs" and "value for money" results. As Fig. 2 shows, the clients rated the CI categories generally lower than did the contractors for "contractor costs." These differences between the clients and the contractors in their perceptions of "contractor costs" could be attributed to the clients' lack of familiarity with the costs incurred by the contractors, especially as there are no significant differences between the contractor groups. This would then account for the differences in the "value for money" results, in which the contractor groups are also generally homogenous. As a result, it was concluded that the contractor's responses were more accurate than were the clients for both the "contractor costs" and the "value for money" sections.

The "value to client" and "client costs" sections, on the other hand, were far more homogeneous and, therefore, could be pooled to fully use the available data.

B. Cost–Benefit Model

1) Analysis: All responses for "value to client" and "client costs" were pooled, and the contractors' responses for "contractor costs" and "value for money" were pooled. A simple linear regression of "value to client," "contractor costs," and "client costs" means was then conducted against "value for money." The results are shown in Table I. The model is an excellent fit, with a high adjusted r^2 of .877. The regression coefficients of 1.02 and -0.19 for "value to client" and "client costs," respectively, are significant ($p < 0.05$). The constant and regression coefficients for "contractor costs" are not significant. The regression model predictions, "actual value for

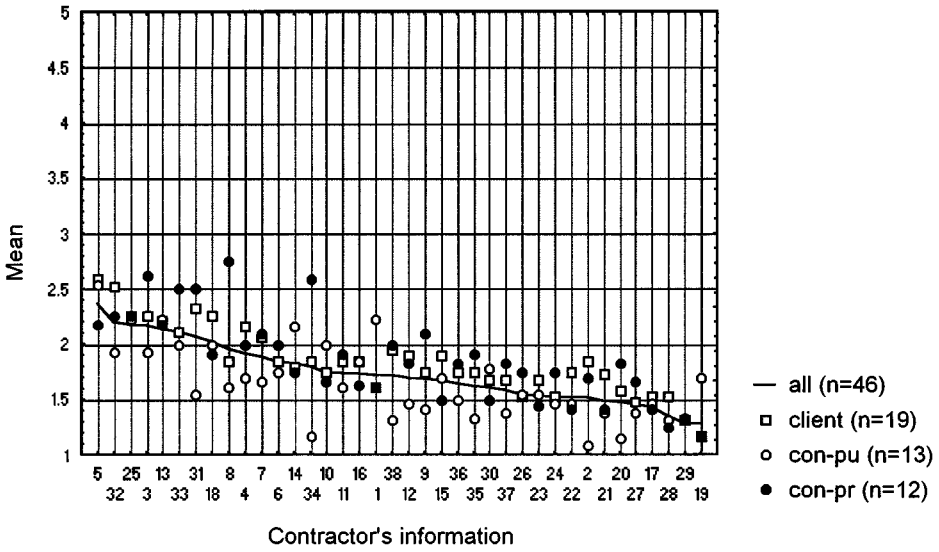

Fig. 3. Client costs.

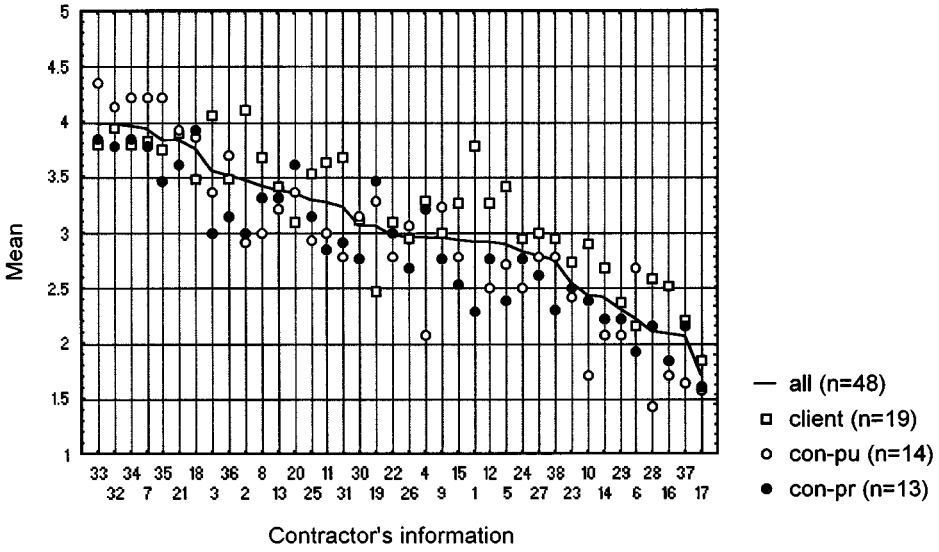

Fig. 4. Value for money.

TABLE I
REGRESSION RESULTS

Coeff.	*Value*	*SE*	*t(34)*	*p-level*
β_0	0.2279	0.2977	0.7657	0.4491
β_1	1.0902	0.0727	14.9970	0.0000
β_2	0.0145	0.1162	0.1249	0.9014
β_3	-0.4854	0.2210	-2.1965	0.0350

money," "value to client," "contractor costs," and "client costs" means are shown in Fig. 5.

2) Discussion: Cost–benefit analysis is aimed at identifying methods or decisions that give the best tradeoff of benefits and costs, i.e.,

$$(B-C)_{\mathrm{CI}} = f(B_{\mathrm{CI}}, C_{\mathrm{CI}}), \tag{1}$$

where

$B-C$ is the cost–benefit value,
B represents the benefits and
C represents the costs for each CI, usually combined into a cost–benefit ratio, such as

$$(B-C)_{\mathrm{CI}} = B_{\mathrm{CI}}/C_{\mathrm{CI}} \tag{2}$$

or the difference

$$(B-C)_{\mathrm{CI}} = B_{\mathrm{CI}} - C_{\mathrm{CI}}. \tag{3}$$

In this case, the B_{CI}s are the perceived "value to client," the C_{CI}s are the perceived "contractor costs" and "client costs," and $(B-C)_{\mathrm{CI}}$s are the perceived "value for money" means. As

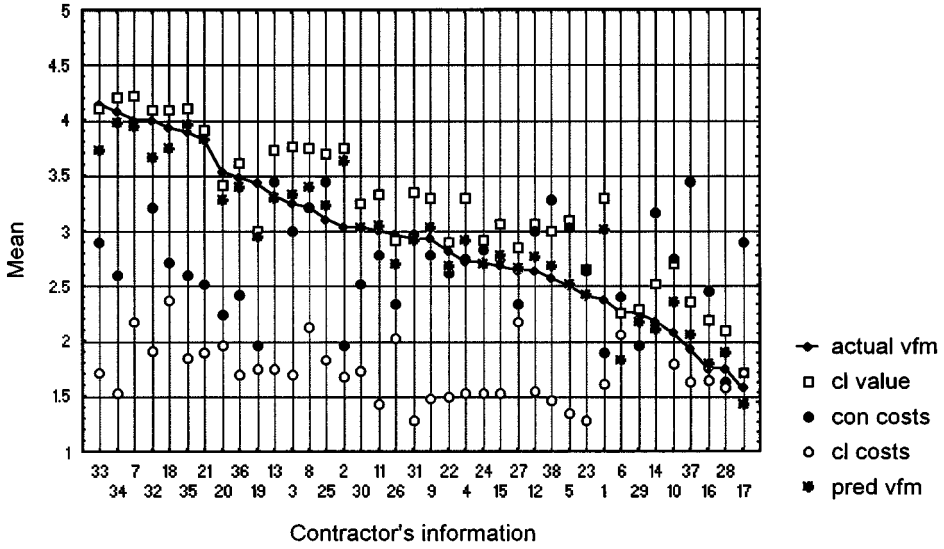

Fig. 5. Benefits and costs.

these measures are subjective and indexed (rather than in comparable units, such as dollar value), they cannot be manipulated in a simple arithmetic way. Clearly the data, being statistical in nature, cannot support (2) or (3). Instead, the following simple linear model version of (3) is used

$$(B-C)=\beta_0+\beta_1 b+\beta_2 c_1+\beta_3 c_2, \tag{4}$$

where

b is the "value to client,"
c_1 is the "contractor costs," and
c_2 is the "client costs" for all CIs.

The expectation, therefore, is that the β_1 coefficient will be positive and the β_2 and β_3 coefficients will be negative.

In the event, this was not the case. The β_1 and β_3 estimates are significantly positive and negative, respectively, as expected. The β_2 estimate, however, was positive (although not statistically significant), indicating that the "contractor costs" are not an important factor in the perception of value for money. There are several possible reasons for this. One is that the respondents were not able to estimate the contractor costs very accurately. This can be easily countered, however, because only the contractors' perceptions were used for this variable. Another possibility is that a model similar to (1) would have been more appropriate. Several nonlinear variations of the statistical version of (1) were tried, but all failed to improve on the predictive ability of (4); so these were ultimately discounted.

One of the reasons for attempting this analysis was that it was thought that respondents might not be fully aware of the degree of value for money for each CI because this is not a question that is usually put to people in practice. Our knowledge of the contractor respondents is that usual prequalification practice dictates the contractors' compliance with client criteria requests and all contractors accept this as a *fait accompli*. Under these circumstances, it is possible that the model's predictions of value for money are, in fact, more accurate than are the actual responses for this variable. Closer visual examination of Fig. 5 suggests this might well be the case. Contrast CI-33 and CI-34, for example: CI-33 is rated higher "value for money" than is CI-34 by the respondents, and yet CI-33 has a lower "value to client" and high "contractor costs" than does CI-34. The model, on the other hand, predicts CI-34 "value for money" to be higher than CI-33. Another example is CI-19, which recorded an unusually low "value to client" by the respondents, but relatively high "value for money." That the model places this CI's "value for money" rather lower accords better with our intuitions. One interpretation of the model, therefore, is that it performs a rather neat smoothing operation on the data, redressing any idiosyncracies in the actual "value for money" responses.

VI. Conclusion

Fig. 6 gives the results of the model together with the respondents' means values of "value to client," "contractor costs," and "client costs" for each CI and rank ordered by the model ratings. It can be seen that the model follows the "value to client" closely, but with a few changes due to the influence of costs.

VII. Summary and Conclusions

Research on prequalification criteria to date has focused solely on the benefits to the client, and it has ignored one of the most fundamental purposes of prequalification, i.e., to reduce the cost of bidding. Decision makers, it is argued here, should prequalify contractors based on decision criteria that have significant benefits to the decision process but with minimal costs to those involved. Cost–benefit analysis should, therefore, assist decision makers in establishing a set of cost-effective decision criteria for contractor prequalification.

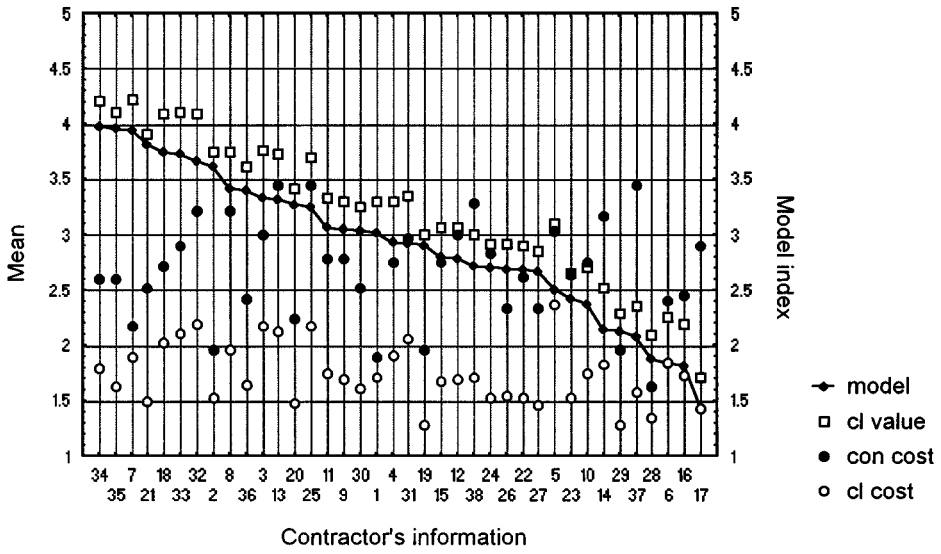

Fig. 6. Cost–benefit model.

The results of the Australian empirical survey indicated that there was major difference in the perception between the client and the contractor groups on "contractor costs" and "value for money." For contractor costs, significant differences were found in claims history, details of accredited quality scheme, frequency in submitting bids, number of professional staff, and qualifications and experience of managerial and technical staff. The clients and the contractors' perceptions on amount of outstanding contracts, annual turnover of company, balance sheet data, cash flow forecast of project, and details of environmental policy were significantly different when they were rated against the value for money.

The lower ratings recorded by the client respondents on contractor costs suggest that the clients underestimated the costs involved to the contractors in preparing and submitting information for prequalification. This is corroborated by the finding that there were no significant differences between the two contractor groups on this measure.

A linear regression analysis of value to client, contractor cost, and client costs means was conducted against value for money, and a simple linear model was derived. The results indicated that the "contractor costs" is not a significant factor in the perception of "value for money." One possible reason is that the respondents were unable to estimate the contractor costs very accurately. Despite that, the model's prediction of value for money seems to have more intuitive appeal, and it is therefore perhaps more accurate, than are the actual responses for this variable as obtained by the questionnaire.

The main purpose of the study was to obtain a rank ordering of CIs for construction contractor prequalification in Australia to enable the client to prioritize prequalification criteria and establish the extent and depth of information required for each criterion. It is obvious that the amount of information for those criteria that are not value for money to the client should be reduced or eliminated. This has the potential to assist the decision makers to focus on the most cost-effective decision criteria for contractor prequalification.

The method used in this study may also be used to enhance the evaluation systems/models proposed in previous research studies [7], [10], [11], [13], [14], [16]. Instead of relying solely on value to client for establishing the importance of prequalification criteria, the value for money of the CIs can be applied to the systems/models to reflect the potential benefits of evaluating any contractor's information collected.

Some public sector clients [20], [21] have already started applying the principles of prequalification in assessing subcontractors (both domestic and nominated). Of course, the cost–benefit approach described here can be used not only for bidders and potential bidders, but also for any subcontractors involved (as quotations are prepared by the subcontractors, such as M&E, to facilitate the tendering process of main contractor). It is envisaged that due to the diversity of subcontracting trades involved, the extent of works involved in prequalifying subcontractors will be much higher than that for the main contractors. The cost–benefit model could, therefore, help the managers to reduce the time and efforts in prequalifying subcontractors.

Finally, it should be reiterated that the approach described in this paper is the first to take into account the likely costs as well as the benefits involved in the prequalification process and opens the way for the identification of a universal set of prequalification for contractor selection criteria. The CIs used in this analysis are derived from previous studies focusing on construction contractor prequalification. It is likely, though, considering the breadth of the previous studies, that they will be generic to all types of engineering contracts. Whether this is indeed the case remains a task for future empirical research to determine. Similarly, the derivation of a model suitable for other situations in which prequalification is needed or simply when nonprice features are to be taken into account in contractor selection is an equally empirical issue to be addressed by future research.

APPENDIX I

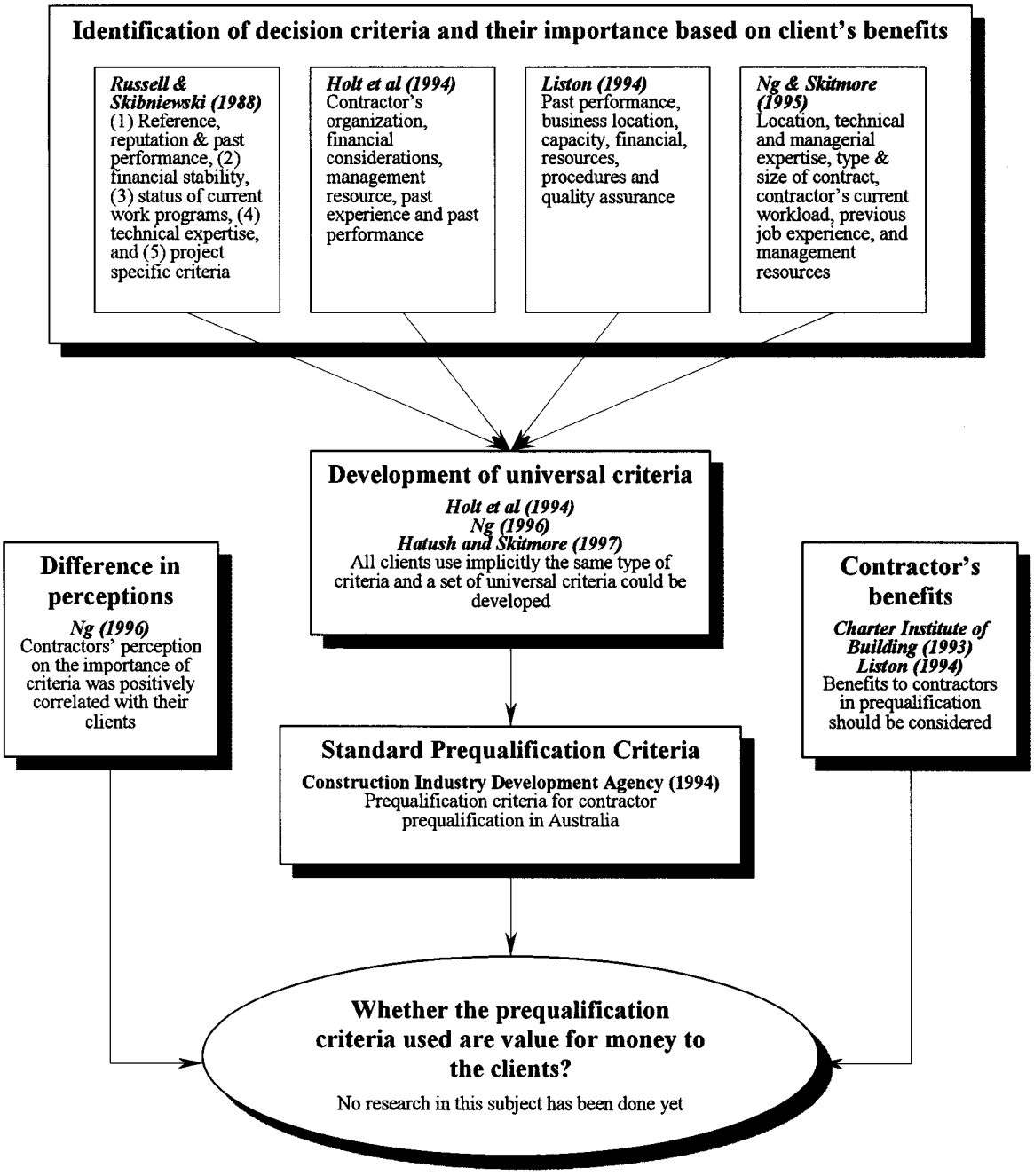

Fig. 7. Major findings of previous research studies in prequalification criteria.

APPENDIX II

The purpose of this questionnaire is to obtain your views on the costs and benefits of the prequalification of construction contractors. This is part of a research project for the Australian Research Council (ARC) concerning Construction Prequalification. The questionnaire should take no longer than half an hour to complete. Only ballpark estimates are needed.

Simply tick a box (or more than one where appropriate) and provide the suitable answer(s) to the questions. If you do not deal with any of the listed project types, please leave the whole column blank. Thank you very much for your kind co-operation.

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Simply tick a box (or more than one where appropriate) and provide the suitable answer(s) to the questions. If you do not deal with any of the listed project types, please leave the whole column blank. Thank you very much for your kind co-operation.

1. You are answering this questionnaire based on the perspective as
   - ☐ *a. client prequalifying contractors*
   - ☐ *b. contractor being prequalified by clients*
   - ☐ *c. project management contractor prequalifying other contractor*
   - ☐ *d. others* .....

Note: The following four questions relate to the office that you are physically working in. The answers should not include data from head office, other branches, parent company or subsidiary companies.

2. Type of organization
   - ☐ *a. public authority*
   - ☐ *b. private client/developer*
   - ☐ *c. architectural firm*
   - ☐ *d. engineering firm*
   - ☐ *e. quantity surveying firm*
   - ☐ *f. project management firm*
   - ☐ *g. contractor*
   - ☐ *h. sub-contractor*
   - ☐ *i. others* .....

Note: If you are a public authority or private client, please go to question 4.

3. What is the rough proportion of work between private and public sector clients?
   (private:public)
   - ☐ *a. 100%:0%*
   - ☐ *b. 90%:10%*
   - ☐ *c. 80%:20%*
   - ☐ *d. 70%:30%*
   - ☐ *e. 60%:40%*
   - ☐ *f. 50%:50%*
   - ☐ *g. 40%:60%*
   - ☐ *h. 30%:70%*
   - ☐ *i. 20%:80%*
   - ☐ *j. 10%:90%*
   - ☐ *k. 0%:100%*

Note: Questions 4 & 5 relate to project types listed below.

4. Number of contracts per annum

	(Number)
a. Building	.....
b. Civil engineering	.....
c. Maintenance	.....
d. Building Services	.....
e. Specialist	.....
f. Others	.....

5. Average sizes of contract

a. Building	.....
b. Civil engineering	.....
c. Maintenance	.....
d. Building Services	.....
e. Specialist	.....
f. Others	.....

6. In your experience, how are contractors' financial capabilities assessed?
   - ☐ *a. ratio analysis*
   - ☐ *b. annual turnover*
   - ☐ *c. mathematical formulae (please specify)* .....
   - ☐ *d. predictive model (please specify)* .....
   - ☐ *e. don't know*
   - ☐ *f. others* .....

7. Which of these rules do you consider to be UNSUITABLE for determining the maximum financial capacity of a contractor?
   - ☐ *a. 25% of contractor's annual turnover*
   - ☐ *b. 30% of contractor's annual turnover*
   - ☐ *c. 33% of contractor's annual turnover*
   - ☐ *d. ten times of contractor's net current assets*
   - ☐ *e. four times of non-transferable assets*
   - ☐ *f. five times of non-transferable assets*
   - ☐ *g. don't know*
   - ☐ *h. others* .....

APPENDIX III
CONTRACTOR'S INFORMATION USED IN THE SURVEY

6. **IF YOU ARE A PREQUALIFIER**, please put a circle on the scale to represent value and cost to the client, your estimate of the cost to the contractor, and total value for money for each piece of contractor information listed below.

   IF YOU ARE A CONTRACTOR (i.e. one who apply for prequalification), please put a circle on the scale to represent value and your estimate of the cost to the client, cost to the contractor, and total value for money for each piece of contractor information listed below.

   Note: ***"Value"*** represents your perception of the usefulness and importance of the information to the client for the prequalification of contractors.

   "Contractor Costs" include those involved in collecting the required information internally or externally (e.g. from the bank), re-organizing information to the format required, planning, checking, typing, presenting, printing, submitting, and explaining the information to the client if necessary for each application for prequalification.

   "Client Costs" include those involved in defining the standard for assessment, preparing and printing the prequalification documents, obtaining such information from the contractor or externally (e.g. financial database, referee, or bank, etc.), clerical time for storing or handling the information, interpreting the information, finding and summarizing useful information, applying useful information to the assessment model, analyzing and assessing information, and making decision for each application.

   "Value for Money" represents your perception of the usefulness of the information in relation to the likely total costs involved to both client and contractor in providing and analyzing the information.

Contractor's Information	*Value to Client*	*Contractor Costs*	*Client Costs*	*Value for Money*
	High -------- *Low* 5 4 3 2 1 0	*High* -------- *Low* 5 4 3 2 1 0	*High* -------- *Low* 5 4 3 2 1 0	*High* -------- *Low* 5 4 3 2 1 0
EXAMPLE	|---|---|---|---|---|---|	|---|---|---|---|---|---|	|---|---|---|---|---|---|	|---|---|---|---|---|---|
+ *Amount of outstanding contracts*	|---|---|---|---|---|---|	|---|---|---|---|---|---|	|---|---|---|---|---|---|	|---|---|---|---|---|---|
+ *Annual turnover of the company*	|---|---|---|---|---|---|	|---|---|---|---|---|---|	|---|---|---|---|---|---|	|---|---|---|---|---|---|
+ *Balance sheet data (e.g. total current assets, total current liabilities, etc.)*	|---|---|---|---|---|---|	|---|---|---|---|---|---|	|---|---|---|---|---|---|	|---|---|---|---|---|---|
+ *Cash flow forecast of the project*	|---|---|---|---|---|---|	|---|---|---|---|---|---|	|---|---|---|---|---|---|	|---|---|---|---|---|---|
+ *Claims history*	|---|---|---|---|---|---|	|---|---|---|---|---|---|	|---|---|---|---|---|---|	|---|---|---|---|---|---|
+ *Competitiveness of previous bids*	|---|---|---|---|---|---|	|---|---|---|---|---|---|	|---|---|---|---|---|---|	|---|---|---|---|---|---|
+ *Credit rating*	|---|---|---|---|---|---|	|---|---|---|---|---|---|	|---|---|---|---|---|---|	|---|---|---|---|---|---|
+ *Details of accredited quality system*	|---|---|---|---|---|---|	|---|---|---|---|---|---|	|---|---|---|---|---|---|	|---|---|---|---|---|---|
+ *Date of completion and date for completion of projects listed*	|---|---|---|---|---|---|	|---|---|---|---|---|---|	|---|---|---|---|---|---|	|---|---|---|---|---|---|
+ *Details of environmental policy*	|---|---|---|---|---|---|	|---|---|---|---|---|---|	|---|---|---|---|---|---|	|---|---|---|---|---|---|
+ *Details of health and safety policy*	|---|---|---|---|---|---|	|---|---|---|---|---|---|	|---|---|---|---|---|---|	|---|---|---|---|---|---|
+ *Details of health and safety training*	|---|---|---|---|---|---|	|---|---|---|---|---|---|	|---|---|---|---|---|---|	|---|---|---|---|---|---|
+ *Details of project planning*	|---|---|---|---|---|---|	|---|---|---|---|---|---|	|---|---|---|---|---|---|	|---|---|---|---|---|---|
+ *Details of staff training program*	|---|---|---|---|---|---|	|---|---|---|---|---|---|	|---|---|---|---|---|---|	|---|---|---|---|---|---|

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