Procuring professional housing maintenance services

Terence Y.M. Lam
Department of the Built Environment, Faculty of Science & Technology, Anglia Ruskin University, Chelmsford, UK

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Abstract

Purpose – This study aims to develop an evaluation model for public managers in Hong Kong to assist in the procurement of best value consultants for professional housing maintenance services as part of the privatisation process.

Design/methodology/approach – The model developed is termed the "strategic evaluation model", in which the strategic objective of improving the efficiency and effectiveness of resources through privatisation is used as the basis for evaluation. A value for money (VFM) ratio can represent both efficiency and effectiveness. This ratio refers to the output service quality versus the input costs, which are assessed independently. Production and transaction costs are quantitative figures, and as such the key issue in the analysis is the forecast of the output quality. It was hypothesized that there was a correlation between output quality and input management and economic factors. A triangulation methodology was used to develop and test out the correlation whereby the literature review and qualitative interviews with the maintenance consultancy management practitioners of the Hong Kong Housing Authority (HKHA) were used to generate the hypothesis, which was then tested by quantitative regression, using data from the maintenance consultancies of the Authority. The hypothesis was validated, and hence an authentic, objective evaluation model was substantiated.

Findings – The main hypothesis was "In evaluating the competitive consultants for providing professional services for housing maintenance, the decision approach to ensuring the optimum use of resources can be determined by an objective comparison of the value for money of the respective services". The sub-hypotheses considered the relationships between output service quality and individual input factors of competition level, past performance, project leadership and quality benchmarking. The results of the qualitative and quantitative studies confirmed and validated the hypotheses, and hence substantiated the strategic evaluation model which is based on objective VFM assessment.

Research limitations/implications – While the model was developed in the context of housing maintenance in the Hong Kong Housing Authority, it can form the baseline from which further research can build to provide an evaluation model for procuring property management and construction professional and contractor services in many other public- and private-sector settings.

Practical implications – The weighted quality and price assessment method previously used is unable to obtain value services. This combined assessment method should therefore be replaced by the strategic model in order to achieve an optimum use of resources.

Originality/value – This paper establishes an evaluation framework for public managers to obtain best value services and hence ensure optimum use of resources in outsourcing of those facilities management (FM) services.

Keywords Privatization, Housing, Maintenance, Strategic evaluation, Hong Kong

Paper type Research paper

Introduction

The privatisation of public services is now a worldwide dominant policy and strategy to deliver public services (Cope, 1996). It is argued that in the interest of public choice

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market competition is essential to achieving efficiency and effectiveness, which can be improved by better working methods, better organisational structure, better equipment and technology, and elimination of waste under market pressure, as quoted by Boyne (1998). Within the Hong Kong Government the Efficiency Unit (2003) argues that outsourcing is extensively used to deliver public services and to obtain value for money (VFM), the key objective in every outsourcing exercise. In the UK, the Audit Commission (2005) also advocates and emphasises that VFM should be adopted in the procurement of social housing services. Improvements in quality and cost are seen as the objectives of privatisation and should be fully considered in the procurement of consultants.

There have been a number of debates about the appropriateness of privatisation and the use of consultants from the private market when delivering public services. What is not in dispute is the importance of the activities for which the external consultants have been engaged, i.e. improving cost and service quality and hence community satisfaction with government performance. Accordingly, the selection of the best value consultant (one who will achieve the specific objective of improving efficiency and effectiveness) is critical for public sector managers (Corcoran and McLean, 1998). Cooley (1994) and Ng *et al.* (2001) advocate that good construction consultants can bring value to the organisations they serve.

However, as a purchasing decision, the selection of a professional consultant is complex and difficult. It requires the public manager to assess a consultant's ability to deliver an intangible, heterogeneous and multi-dimensional product. The professional services (which are provided by typically qualified professionals having a recognised identity) offered are advisory in nature, focused on problem solving and are usually commissioned on a project basis (Davies *et al.*, 1993). Every maintenance or construction project is different, with buildings having different user requirements, complexity, age, causes of failure, extent of obsolescence, etc. An experienced professional will recognise many of the same characteristics from project to project, but each project will generally have some unique character. Professional judgment is needed to recognise similarities and differences and to decide what to do with a difficult project, one that is going to require extra time or different kinds of techniques. Professional services vary from performance to performance. Measuring quality, in terms of criteria and standards, is therefore difficult (Epstein, 1991).

Added to this is the fact that the consulting organisation cannot be realistically tested prior to purchase, and public managers may have limited experience of purchasing such a service. From this, the level of difficulty in selection becomes apparent (Corcoran and McLean, 1998).

There has been a lack of research on the selection of consultants in the public sector. Previous research in the UK, the USA and other countries has only considered cost savings, quality benefits and fair competition as the three main successful outcomes of the contracting-out of services. Nonetheless, no empirical work has been conducted and there is a lack of a conceptual framework to arrive at these three prescriptions (De Hoog, 1995; Pottinger, 1998). Privatisation primarily aims to improve productive efficiency and effectiveness and ensure the best use of resources. There is a need to develop an evaluation framework, based on theory, for assessing consultants on their quality attributes with respect to their cost, and such a framework must be objective

and generally accepted (Construction Industry Review Committee, 2001; Construction Industry Council, 1993; Latham, 1994, 2002).

Contracting-out of services has proliferated in different industries and property services (Field Fisher Waterhouse and Remit Consulting, 2004). Contracting-out of property services has become a current trend in the in the UK, one which is expected to continue in the next decade (Lane, 1994). The International Facilities Management Association (IFMA) conducted a questionnaire survey on contracting-out of services among its US members and found that the services most often outsourced are building maintenance, architectural design and engineering (International Facilities Management Association, 1993). Price Waterhouse Coopers (1999) confirmed that housing maintenance and management services are commonly contracted out in Hong Kong, and argue that the service providers can offer quality service at a competitive price. In 1999, the Hong Kong Housing Authority decided to privatise its professional housing management and maintenance services for a portfolio of more than 600,000 flats in the forthcoming years.

The privatisation of public services has been increasingly extended to housing management and maintenance. This research aims to develop an objective evaluation framework for public managers in Hong Kong to select the best value housing maintenance consultants in the privatisation process so as to achieve the most efficient and effective use of resources. The process involves empowerment, by which the service production is transferred to the private supplier in order to benefit consumers. The professional services that can be privatised cover architectural design, building surveying, quantity surveying, building services engineering, structural engineering, geotechnical engineering and civil engineering.

In the following section, problems of the combined weighted quality and price assessment method used by the public sector in Hong Kong are examined. A hypothetical assessment model based VFM ratio is developed from the theories of strategic management and value for money. All stakeholders look to improve the efficiency and effectiveness of housing maintenance services through a privatisation strategy. The VFM ratio can support both efficiency and effectiveness objectives. It takes the form of *output service quality versus input costs*, which are independently assessed. Because production and transaction costs are factual, tangible figures, the key issue in the assessment of consultants is related to forecasting their output quality. It is hypothesized that there is correlation between output quality and input management and economic factors. The research method is then discussed, whereby the triangulation methodology is employed to develop and test correlations. Literature review data and qualitative interviews with consultant management practitioners of the Hong Kong Housing Authority (HKHA) were used to establish the hypothesis, which was then tested by quantitative regression analysis using data from the maintenance consultancy contracts of the Authority. The impact of the production and transaction costs on VFM ratio is examined in the next section. Following on from this, the evaluation of property management and construction services is discussed generally. Finally, the validated model is summarised, and it is recommended that the combined assessment method should be replaced by the objective VFM ratio approach. While the model is developed in the context of housing maintenance in the HKHA, it can form the baseline on which further research can build to develop evaluation models for procuring property management and construction professional and contractor

services in many other public- and private-sector settings to ensure the optimum use of resources in outsourcing of these FM services.

Problems of the existing assessment method

Value for money (VFM) is now a predominant evaluation principle for the procurement of public services (Efficiency Unit, 2003). The existing approach for evaluating construction consultants in the Hong Kong public sector is a combined weighted quality and price assessment method, i.e.:

$$\text{Combined score} = \text{quality score} \times \text{weighting} + \text{fee score} \times \text{weighting}.$$

Nonetheless, this method has two major drawbacks which render it unsuitable for selecting value services. First, assessors are given discretion to choose from pre-determined ranges of weightings for quality against price and the individual technical quality criteria, thus introducing subjectivity to the assessment. As a result, different consultants may be selected depending on whether upper or lower range of the weightings is chosen (Ng *et al.*, 2001). Second, fees have a much greater variability and hence higher competitiveness than quality in the combined score assessment. Tenderers may be biased to compete for fee rather than quality. This problem is emphasized by the theory of quality-fee variability (Connaughton, 1994), and well demonstrated by the empirical studies of Lam (2000) on architectural consultancies and Drew (2000) on quantity surveying consultancies for the Hong Kong Government construction projects. There needs to be a revolutionary change in replacing the existing approach with an objective evaluation model in which quality and price are independently assessed.

The strategic evaluation model

From the strategic management point of view, public managers should always review the environmental changes and seize opportunities to improve their organisational performance, in particular the changes in market competition and customer expectations. Privatisation is always taken by various governments as a strategic choice to improve the cost and quality of public services. In the context of housing maintenance services, there are a number of key stakeholders involved in the privatisation process, including the government itself, tenants and owners, political parties and the public. These stakeholders all look to improve the productive efficiency and effectiveness in the use of resources through privatisation (Audit Commission, 2005; Hong Kong Housing Department, 2001; Price Waterhouse Coopers, 1999; Choi, 1999; Farnham and Horton, 1996). Improving efficiency and effectiveness should therefore be the strategic objective for evaluation of the privatisation choice and the subsequent procurement of consultants.

According to the principle of value for money, VFM fundamentally consists of two elements, namely efficiency and effectiveness (Department of Environment, 1992). The Audit Commission (2005) reiterates such a concept for the procurement of social housing services in the UK. To obtain best value services from external suppliers, both cost and quality should be considered. There is a clear relationship between these elements, but the Audit Commission does not state how they should be related to each other quantitatively and objectively, and only suggests that value assessment should be based on an overall judgment of quality against cost, which is quite subjective.

Epstein (1991) refers to the effectiveness of professional services as quality of output. Effectiveness is concerned with the extent to which output meets organisational needs and requirements. The research of Corcoran and McLean (1998) on management consultant practices in the Australian public sector finds that public managers always weight quality against costs in the selection of consultants in order to achieve VFM services. Such an approach is also recommended by Akhlaghi (1996) to ensure best value services in the facilities management industry. O'Looney (1998) recommends that there should be a trade-off ratio of quality to price by which we can determine whether the higher quality offered comes at a fair or gouging price. Quality should not be considered on its own, but along with the costs involved. The performance indicator for the effectiveness element of VFM should therefore be taken as a ratio of "quality to price". For efficiency, this is universally accepted as a ratio of output to input (Boland and Fowler, 2000). Gupta (1995) takes output quality as a measure of professional services in the assessment of efficiency. The performance indicator of the efficiency element of VFM can therefore be expressed as a ratio of "output quality to input costs". Both the efficiency and the effectiveness elements can hence be represented by a common performance indicator, the VFM ratio, which is a ratio of "output service quality to input costs".

In such a VFM ratio, quality and costs are independently assessed. The input costs comprise the production cost of a tendered fee and the transaction costs for performance monitoring. Because all these costs are tangible, factual and objective figures, the key issue in the evaluation is output service quality. If the service quality can be forecast accurately and objectively by a quantitative statistical tool, the VFM ratio approach will offer an objective basis for evaluation. Empirical studies show that there are causal relationships between output service quality and input economic and management factors in manufacturing, transport and medical production processes (Terziovski and Dean, 1998; Lee *et al.* 1999; Forker, 1997; Adam, 1994). These researchers found that the regression model could be used as a powerful tool to forecast performance quality significantly.

Based on the theories of strategic management and value for money as well as empirical studies, a hypothetical evaluation model is developed as shown in Figure 1.

The main hypothesis was: "In evaluating the competitive consultants for providing professional services for housing maintenance, the decision approach to ensuring the optimum use of resources can be determined by an objective comparison of the value for money of the respective services". The sub-hypotheses considered the relationships between output service quality (dependent variable) and individual input factors of competition level, past performance, project leadership and quality benchmarking, fee level and size of firm (predictor variables). These input factors were identified from the theories of public choice (Boyne, 1998), selection psychology (Ling, 2000), leadership (Longenecker and Scazzero, 2000) and benchmarking (Lau and Idris, 2001) and empirical studies ((Hartfield and Oluwoye, 2001; Forker, 1997; Hoxley, 1998; Rizzo, 1996). According to the results of research conducted by Hoxley (1998) on the effect of competitive tendering on the service quality of construction related professionals in the UK, there is no significant relationship between fee level and service quality because under market competition, firms would try to raise its efficiency and service quality by improving their institutional structure and method of production. However, the fee factor was still included in the regression model to test whether it really has no

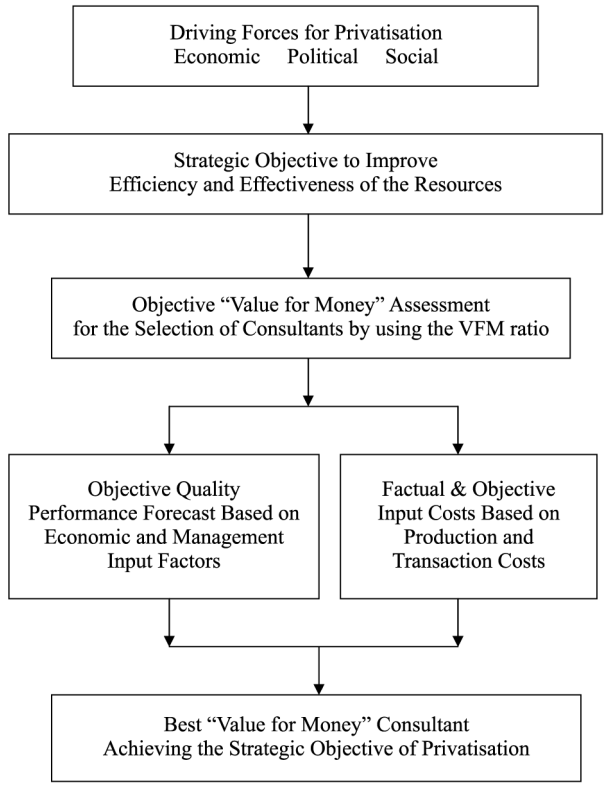

Figure 1.
Hypothetical strategic evaluation model

relationship with quality performance in the context of Hong Kong public sector. The construction industry in Hong Kong generally has a concern about the negative impact of low price on service quality (*South China Morning Post*, 2001).

Research method

Triangulation methodology was adopted to examine the causal relationship between output service quality and input economic and management factors. There has been a lack of comprehensive research on the collective impact of economic and management practices on output quality performance in the context of privatisation of professional housing maintenance services. This was found to be the case after an extensive literature search over the past 30 years (Lam, 2002). Hypotheses were generated by theory and literature and then compared with the findings from qualitative interviews with 30 consultant management practitioners of the HKHA to establish final hypotheses for testing by quantitative regression analysis, using data from 50 maintenance consultancies of the HKHA. The 30 practitioners constituted 50 per cent of the population of 60, and the 50 maintenance consultancies was 69 per cent of the consultancy contracts completed between 1998 and 2002. Such a methodology achieved high levels of authenticity and generalisation, and most importantly objectivity.

Discussion of the empirical results

Descriptive analysis was conducted to obtain qualitative views of the 30 consultant management practitioners in order to explore whether they agreed that the individual input factors of competition level, past performance, project leadership and quality benchmarking, fee level and size of firm would significantly influence the output service quality. The results are given in Table I, and generally confirmed the sub-hypotheses which were developed from theory and a literature review, as discussed above. There should be positive significant correlations between output service quality and input factors of competition level (25 out of 30 agreed), past performance (27 out of 30 agreed), project leadership (24 out of 30 agreed) and quality benchmarking (25 out of 30 agreed). The hypotheses that output service quality had a correlation with size of firm (14 out of 30 agreed) and that no correlation with fee level (15 out of 30 agreed) were kept unchanged for quantitative testing because the qualitative results on these two factors were inconclusive.

The multiple linear regression equation is shown in Table II. The analysis was run by the SPSS programme and the results are given in Table III. It showed a significant adjusted R^2 of 0.773 for the overall correlation between the output service quality and the input factors of competition level, past performance, project leadership and quality benchmarking. Norusis (1996) regards the correlation between dependent variable and predictor variables to be significant if the adjusted R^2 is around 0.800.

Mohr (1990) considers the relationship between the dependent variable and the individual predictor variable to be significant if the partial regression coefficient of predictor variable has a t-value > 1.98 or < 1.98 at significance level smaller than 0.05. Past performance and competition level stand out to be the highly significant predictors. "Past performance" was the most significant predictor, with a t-value equal to 2.804 and a p-value equal to 0.007. Such a finding coincides with the empirical evidence from the case study of the selection of consultants for alteration and addition building works in Australia (Hartfield and Oluwoye, 2001), i.e. that past performance is particularly relevant to predict the service quality of professional maintenance services. In fact, many studies show that past performance is an important criterion for the selection of construction consultants (Kasma, 1987; Parks and McBride, 1987; Winch and Schneider, 1993). Past performance is considered to be the best predictor of future performance according to the theory of selection psychology (Hogan *et al.*, 1996).

"Competition level" was highly significant to the output service quality, with a t-value equal to 2.567 and a p-value equal to 0.010. This shows that market competition does have a strong effect on improving service quality, as explained by the theory of public choice and its associated argument of market competition (Boyne, 1998).

"Size of firm" was excluded from the regression model because the factor had a t-value of 0.095 and a p-value of 0.925. This shows that the factor itself is highly insignificant to the output performance. The finding clarifies the contradictory views of the practitioners in the qualitative study. Rowbotham (1992) confirms it is not the size of firm but the competence, experience and adequacy of project resources that are crucial to the output performance.

"Fee level" was also excluded from the regression. With a t-value of 0.053 and a p-value of 0.958, this factor itself was found to be highly insignificant to the output service quality. This finding coincides with the empirical result of Hoxley (1998) that there is no significant correlation between fee level and service quality in the

Table I.
Descriptive analysis of the qualitative views

	B. Significant relationship between the variables			
A. Input factors affecting service quality	Yes[a]	No[b]	C. Cause-effect analysis	D. Overall coherent view on the relationship based on B & C
Competition level	25	5	Main reasons for the relationship: threat from competitors improves the performance of managers and workers Competition also improves institutional structure and procedures, and production methods	Significant positive relationship
Past performance	27	3	Main reasons for the relationship: Past performance reflects a firm's experience, competence and commitment Past performance is a good indicator of future performance	Significant positive relationship
Project leader assessment system	24	6	Main reason for the relationship: Competent leaders have the experience and management skills to ensure good design, total quality management, and effective communication between project team members	Significant positive relationship
Quality benchmarking system	25	5	Main reason for the relationship: Competitive quality benchmarking provides opportunities to learn and improve organisational performance	Significant positive relationship
Size of firm	14	16	Contradictory arguments on the relationship: Large firms have the benefits of adequate resources and broad technical and management expertise Small firms can allocate senior staff to the project	Inconclusive relationship
Fee level	15	15	Contradictory arguments on the relationship: Lower fee means less resources to be injected into the project Firms can minimise costs by improving production methods and institutional structure	Inconclusive relationship
Informant nominated factor: performance monitoring	30	0	Main reasons for the relationship: Detailed specification, careful selection of consultants and stringent contract management can ensure good quality service Effectiveness of monitoring depends on the competence of individual monitoring staff	Significant positive relationship

Variables	Operationalisation
Dependent variable	
OSQ (output service quality)	Average of the quarterly performance scores in the maintenance consultancy
Predictor variables	
CL (competition level)	Number of bidders in the tendering
PP (past performance)	Average of all quarterly performance scores in the similar consultancies of the past two years
PLAS (project leader assessment system)	1 or 0 for presence or absence of the system (of the 50 consultancy contracts used for the regression analysis, 27 had started to use the PLAS system in which the factor was operationalised by the length of post-qualification and experience in similar public and private projects, and the percentage of time committed by the project leader for the related consultancy)
SF (size of firm)	Number of qualified professional and administrators
BS (quality benchmarking system)	1 or 0 for presence or absence of the system (32 of the 50 consultancy contracts had started to use the BS system, in which the quarterly appraisal performance scores of all consultants of individual disciplines were classified into three quartiles for comparison and learning. Quality performance of the upper quartile was used as a benchmark for performance improvement of the other quartiles)
FL (fee level)	Tendered fee percentage in the maintenance consultancy

Notes: $\mathrm{OSQ} = \alpha + \beta_1\mathrm{CL} + \beta_2\mathrm{PP} + \beta_3\mathrm{PLAS} + \beta_4\mathrm{SF} + \beta_5\mathrm{BS} + \beta_6\mathrm{FL} + \varepsilon$, where α is a constant, or the Y-intercept of the regression plane; β_n are the regression coefficients for the predictor variables; and ε is an error constant arising from the prediction values and the actual observed values, which are subjected to variability and cannot be expressed as an exact linear relationship. According to Montgomery and Peck (1982), the relationship between dependent and predictor variables should be assumed to be linear, and this is usually a start-point for regression analysis. A general multiple linear regression model can be expressed as $Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \ldots \beta_5 X_n + \varepsilon$, where Y is the dependent variable and X_n is the predictor variable. Based on the sub-hypotheses, the regression model for this research was set as $\mathrm{OSQ} = \alpha + \beta_1\mathrm{CL} + \beta_2\mathrm{PP} + \beta_3\mathrm{PLAS} + \beta_4\mathrm{SF} + \beta_5\mathrm{BS} + \beta_6\mathrm{FL} + \varepsilon$

Table II.
Regression model for the production process of professional housing maintenance services

competitive tendering of professional construction services. Under market competition, firms try to improve their productive efficiency according to the theory of public choice. Certainly professional firms are much leaner than they were 15 years ago. The introduction of IT has contributed to a reduction in the number of staff employed by professional firms. Nonetheless, there is a limit to how efficient a firm can become before it falls into a position where clients begins to notice a decline in quality (Grönroos, 1984), i.e. when excessive fee undercutting occurs. If excessive fee undercutting is allowed, there should be a negative correlation between service quality and fee level. Fortunately, in all the 50 maintenance consultancy cases used for testing, the HKHA did exercise due care to screen out the unrealistic tenders by comparison

Model	R	R^2	Adjusted R^2	SE of the estimate	Durbin-Watson	Testing procedure
Stepwise regression model analysis						
1	0.809[a]	0.654	0.647	6.998		Stepwise
2	0.858[b]	0.737	0.725	6.162		Stepwise
3	0.879[c]	0.772	0.758	5.790		Stepwise
4	0.890[d]	0.791	*0.773*	5.605	1.757	Stepwise

Analysis of the chosen regression model 4
Dependent variable: output service quality
Significant predicator variables accepted:
Past performance (PP)
Quality benchmarking system (BS)
Competition level (CL)
Project leader assessment system (PLAS)

Model summary

Multiply R	0.890
R^2	0.791
Adjusted R^2	0.773
Standard error of the estimate	5.600
Durbin-Watson statistic	1.757

Analysis of variance

	Sum of squares	df	Mean square	F	Sig.
Regression	5,363.215	4	1,340.804	42.685	0.000
Residual	1,413.505	45	31.411		

Variables in the equation

Variables	B	SE B	β	t-value	p-value
PP	0.381	0.136	0.318	2.804	0.007
BS	6.033	2.676	0.249	2.255	0.029
CL	1.246	0.485	0.259	2.567	0.010
PLAS	4.621	2.282	0.198	2.205	0.049
Constant	27.611	7.802		3.539	0.001

Insignificant variables excluded

	β in	t-value	p-value	Partial correlation	Collinearity/tolerance
Size of firm (SF)	0.007	0.095	0.925	0.014	0.863
Fee level (FL)	0.006	0.053	0.958	0.008	0.399

Notes: [a]Predictors: (constant), past performance; [b]predictors: (constant), past performance, benchmarking system; [c]predictors: (constant), past performance, benchmarking system, competition level; [d]predictors: (constant), past performance, benchmarking system, competition level, project leader assessment system; [e]dependent variable: output service quality. Model 4 has the best adjusted R^2 (0.773) and should therefore be chosen

Table III.
Regression analysis of the quantitative study

with the current market prices. This price screening policy is therefore important to ensure service quality in the competitive fee tendering system.

The dependent and the predictor variables should objectively be measured. Without these objective measures, the regression analysis would not produce objective findings. In this research, the dependent variable of output service quality was measured by using the quarterly performance appraisal model for maintenance consultants of the HKHA (see Appendix), which is virtually the same as the proven SURVEYQUAL quality gap model for performance measure of construction and property professional services in the UK public sector (Grönroos, 1984; Hoxley, 1998). In both models, the quality criteria for planning, design, contract administration and relationship with client are measured by the quality gap between perception and expectation as represented by various grades which correspond to different marks. These criteria can be categorized into five quality dimensions of tangibles, reliability, responsiveness, assurance and empathy. For the predictor variables, the management and economic influencing factors were operationalised by the objective figures as shown in the regression model in Table I.

To check for a non-linearity relationship that may exist between the dependent variable and predictor variables, Studentised residuals were plotted against the predicted values of output service quality. If the relationship is non-linear, a curve will appear in the plot (Norusis, 1996). The scatter diagram showed that the residuals were randomly scattered and not in a curve pattern, as shown in Figure 2. Hence, the relationship was not non-linear and there was no need to use a non-linear regression or other functions. The result supported that the linear assumption for the regression model was not violated.

Another assumption required for regression analysis is that all observations of dependent variables are independent of one another. This means that the value of one observation is in no way related to the value of another observation. The Durbin-Watson test can be used to check whether adjacent observations are correlated, and hence to confirm the validity of the regression model. According to Norusis (1996), if the Durbin-Watson value is between 1.5 and 2.5, there is no significant correlation between successive residuals and all observations are independent in nature. The value of this statistic was found to be 1.757, and hence the validity of the regression model was not violated.

The results showed that there was a significant correlation between output service quality and the input factors of competition level, past performance, project leadership and quality benchmarking, and therefore substantiated the hypotheses and hence the strategic evaluation model which is based on the objective VFM assessment, as shown in Figure 3.

Impact of costs on VFM

Competition is considered to be a significant stimulant of service quality and productive efficiency based on the theory of public choice (Boyne, 1998). It is argued that quality and efficiency improvement arises from the competition between rival suppliers, which enforces the performance of managers and workers, and allows the selection of the best working methods, organisational structure and equipment as well as elimination of waste.

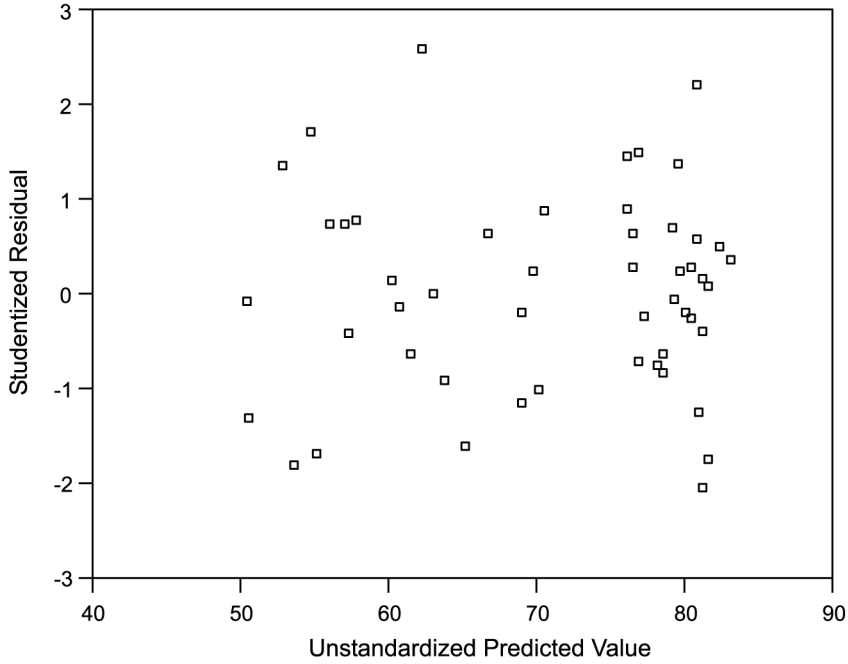

Figure 2.
Scatter diagram for Studentised residuals versus predicted values of output service quality

Empirical cases in the Hong Kong Housing Authority and the Hong Kong Architectural Services Department confirmed that competition led to significant improvement in production costs, i.e. a reduction of 24 per cent for the former and 40 per cent for the latter, as quoted by Lau (1999) and the Hong Kong Housing Authority (1996, 1998). As such, competitive tendering should be adopted for the privatisation of professional housing maintenance services to enhance the VFM of services. While market competition can significantly improve efficiency and production costs, the industry always has great concern about the negative impact of the associated low fee on service quality. The empirical study conducted by Hoxley (1998) on the UK construction industry indicates that there is no significant relationship between service quality and fee level in the process of compulsory competitive tendering of construction and professional property services. Such a relationship in the context of public housing maintenance services in Hong Kong is further validated by the quantitative result of this research.

According to the theory of transaction cost economics, performance monitoring is necessary to ensure service quality and the transaction costs involved should be considered along with the production cost (Coase, 1990; Williamson, 1979). Professional housing maintenance services are difficult and expensive to monitor (Walsh, 1995). Furthermore, the services usually have a complex nature due to the uncertainty of works and the influence of occupying tenants, thus requiring more stringent performance monitoring and hence high transaction costs. An analysis of the 50 maintenance consultancies of the HKHA indicates that the transaction costs to production cost ratios are over 30 per cent (Lam, 2002). For complex works having the characteristics of a high uncertainty of the extent of work and continuous influence

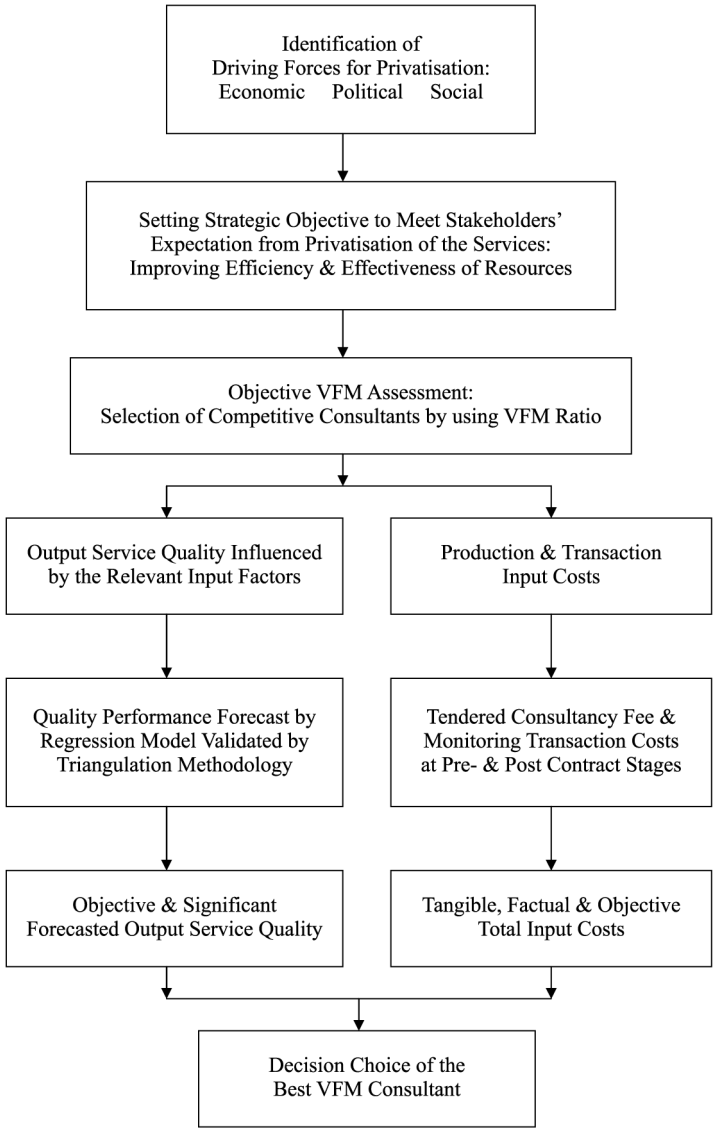

Figure 3.
Strategic evaluation model

from tenants and political parties, the ratios are even higher. These works include common major planned building maintenance works, the replacement of estate roads and underground pipework, and structural repairs. Clearly, the transaction costs of monitoring the performance quality of professional housing maintenance services are significant. There is no doubt that such high transaction costs can significantly affect the total input costs and therefore must be considered carefully in evaluating the VFM of professional services.

Evaluation of property management and construction services

VFM is the procurement principle for the delivery of public services through the market. Lavery (1999) finds from his research findings on the practices of local government in the USA and the UK that such a principle is generally used for both professional and contractor services. The Audit Commission (2005) and Pottinger (1998) advocate that VFM should be adopted to obtain the best value housing and property management services from external suppliers in the outsourcing process. In extensive studies of the Hong Kong and UK construction industries, the Construction Industry Review Committee (2001) and Latham (2002) confirm that public and private clients should drive best value services to improve the cost and quality of works.

The HKHA has been adopting the VFM principle to assess tenders for housing and construction services (Hong Kong Housing Department, 2001, 2005), covering professional services for housing management and maintenance and contractor services for cleaning, security, horticulture, lift maintenance and minor works. For individual and integrated (both professional and contractor) services, the combined weighted quality and price method has been used to produce an overall mark for evaluation and selection of consultants and contractors. As discussed previously, this combined score assessment cannot obtain value services because it has two major drawbacks:

(1) assessors' subjective judgement to choose weightings for quality and price; and

(2) tenderers' biased tendering strategy towards fee rather than quality.

An objective VFM ratio approach should therefore be adopted to eliminate these problems in the selection decision for housing and construction services.

Accordingly, the VFM principle should be used for the procurement of individual or integrated professional and contractor property management and construction services in the public and private sectors. Based on the triangulation methodology of this research, the performance regression models can be developed to forecast service quality for VFM assessment of competitive services in the outsourcing process, using the input economic and management factors specific to an organisation.

Conclusions and recommendations

Based on the findings of this research, a strategic evaluation model for the selection of consultants in the privatisation of professional housing maintenance services is developed and shown in Figure 3. This objective evaluation model can ensure the selection of the best value consultants and the most efficient and effective use of resources.

Because the VFM ratio evaluation approach can drive towards best values services, it is recommended that such an approach should replace the combined score assessment system for the privatisation process.

It seems that the problem of subjectively chosen weightings for assessment scores can be avoided by using fixed weightings for quality against price and the individual technical quality criteria. However, provided that quality and price are assessed together under the combined score system, the fee would dominate over quality to excessively influence the award of the tender because it has a much greater variability. Consequently, tenderers are still biased to compete on the fee rather than on quality. It is therefore pointless to adjust the existing system by using fixed weightings. The

whole combined weighted quality and price evaluation system should be entirely replaced.

Tenderers should be fully briefed that quality and costs are assessed independently under the VFM ratio approach. Quality assessment is based on an objective performance forecast, not on technical proposals. On the other hand, the input costs comprise both production and transaction costs. Tenderers should compete for both quality and fee. There is no way that the fee can dominate the overall assessment. Technical proposals in the tender can still be retained and submitted along with the price, but only as a reference to indicate whether the tenderers fully understand the specification and meet the minimum requirements in respect of company profile and experience, project team resources, and project design and execution.

While competition level, past performance and project leader assessment can be used directly to forecast quality performance significantly at the pre-contract stage, quality benchmarking amongst consultants should be implemented at the post-contract stage as a complementary measure in the privatisation process to enhance service quality and hence VFM performance.

The empirical test results show that the fee level does not have a significant correlation with the output service quality. This can be explained by the theory of public choice. Under market competition, firms improve their productive efficiency and service quality by better institutional structures and production methods. As such, it is recommended that competition should be kept high in the privatisation process. In fact, the empirical results show that the level of competition does have a significant impact on service quality. Nonetheless, price screening should be incorporated in the selection process to exclude unrealistic prices due to excessive price undercutting. The tendered prices should be carefully compared with the current market prices and checked to see if they can at least cover production costs in the first place.

Both the qualitative and the quantitative results show that past performance is the most significant predictor of output service quality. A problem arises if a new tenderer does not have past performance records in a public organisation. Under the constraint of the public sector, public clients prefer to obtain references from official sources (Corcoran and McLean, 1998). It is therefore recommended that a central government database should be set up to keep the performance records of consultants in all government departments. For consultants who have not worked for the government before, past performance should be assessed based on the firm's reputation. Reputation is regarded as a good indicator of a firm's performance because it is built on the past performance, which is the best predictor of future performance. Assessment of reputation should be based on references from professional institutions and major private clients to ensure impartiality. For completely new organisations having no or inadequate job references, past performance of their key project personnel should be used for the quality assessment.

The project leader assessment system is a significant predictor of service quality. The leader's competence is in turn determined by three critical factors of length of post qualification experience, length of relevant experience in similar government and private projects, and percentage of time committed for the consultancy. Thus the results also infer that these critical factors can be incorporated in the regression model for performance forecast. It is paramount that competent team leader should be employed to execute the consultancy. To facilitate this, it is recommended that a

project leader registration system be set up to monitor the performance of the project team leaders. Poor performers should be sanctioned by suspension of service for a period of time or even removed from the registration list. On the contrary, good performers should be given an outstanding award to encourage quality performance. On the training side, professional courses in university should put more emphasis on project management of maintenance works.

Size of firm was found to have no significant correlation with output service quality. Instead, it is the competence, experience and adequacy of project resources that determine the performance quality. These in turn can be reflected by the past performance.

On the cost side, this research shows that competition does lead to a substantial improvement in production cost/tendered fee for professional housing maintenance services. It is therefore recommended that competitive tendering should be adopted for procuring services. This can enhance the VFM performance. Transaction costs for performance monitoring of services are found to be significantly high. As such, the transaction costs incurred in the pre-contract procurement and the post-contract implementation stages should be examined carefully in assessing the VFM ratio. These include the costs of setting up a monitoring team, establishing and managing approved lists of consultants, preparing detailed specification requirements, evaluating tenders, implementing contracts, monitoring consultants' performance against specification and tenant requirements, and managing contractual issues.

Performance monitoring is necessary to ensure service quality. It is therefore recommended that consultant management training be provided to monitoring staff to strengthen their knowledge and skills in the selection and monitoring of consultants, as well as communication and co-ordination.

In developing an evaluation model for the selection of professional maintenance consultants, this research adopted the triangulation methodology, whereby theory and literature as well as qualitative views of consultant management practitioners were used to generate and finalise the hypotheses, which were then tested by quantitative data from the maintenance consultancies of various disciplines. Such a methodology could achieve high levels of authenticity and generalisation, and most importantly objectivity. This approach is suitable for practical problems that lack previous research, and should be adopted for studies of various housing services.

Limitations and further research

The main objective of this research is to study the causal relationship between output performance and input factors. The empirical test results confirm that output service quality can be forecast, with a high level of confidence by a regression model, using relevant economic and management factors.

The strategic evaluation model was developed from one particular set of data from the privatised maintenance consultancies of the Hong Kong Housing Authority, using regression analysis. Different organisations have their own distinct service quality requirements and the economic and management measures to control quality. It is not the intention of this research to form a universal prediction base for quality performance in all other organisations. It is therefore recommended that further research should be done to test the arguments of this research in other organisations,

using their own set of economic and management data for testing the performance causal relationship, to establish their own performance forecast models.

In other public and private sector settings, evaluation models for procuring the best value property management and construction consultants and contractors, on either an individual or an integrated basis, can be developed based on the strategic evaluation model and the triangulation methodology approach adopted by this research. Such evaluation models can achieve an optimum use of resources in the outsourcing of these FM services.

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Appendix

Table AI.
Comparison of the service quality criteria adopted by the SURVEYQUAL model for construction professional services and by the performance appraisal model of the Hong Kong Housing Authority for maintenance consultants

Quality dimensions	Quality criteria in SURVEYQUAL model	Quality criteria in the performance appraisal model of the Housing Authority
Tangibles	Use of up-to-date technology	Use of CADD and computerised project management tools
	Tidy appearance of staff	Working relationship
	Presentation of written and graphical output	Presentation of design materials
	Standard of verbal presentation	Presentation of design materials
	Whether size of firm is appropriate for the services	
Reliability	Creativity and capacity of the design	Recommendation and report to suit client brief; design/repair solutions to suit client's requirements
	Whether solutions to problems are technically correct	Collection and interpretation of background information; condition survey for building assessment; detailed design
	Cost control of the project	Budget estimates for possible design options; project budget; production information; design and budgetary control before tendering; tender assessment and report
	Involvement of the firm's directors or partners in the project	Attendance and performance of the key personnel in project team
	Whether the site supervision is good	Inspection of quality and progress of works; recruitment, supervision and administration of site staff
	Whether the firm understands the client's organization	Understanding and complying with client organisation's procedures and quality manuals
	Responsiveness	Whether the firm provides its services at the time it promises
	Administration/running of contract; continuous services during maintenance period	
	Whether the firm informs clients when it will perform services	Co-ordination with client's liaison officer
	Whether the firm provides prompt services	Timely response to client's enquiries and requests; quick handling of contractor's claims; early settlement of final account
	Whether the firm is always willing to help its client	Timely response to client's enquires and requests
	Whether the firm is never too busy to respond to client's request	Timely response to client's enquires and requests
Assurance	Whether the firm is easily accessible	Timely response to client's enquiries and requests

(*continued*)

Quality dimensions	Quality criteria in SURVEYQUAL model	Quality criteria in the performance appraisal model of the Housing Authority
	Whether the client feels safe in his dealing with the firm	Process control and review of the project
	Whether the firm's employees are always polite to the client	Working relationship with the client
	Knowledge and competence to solve the problem	Application of professional knowledge and judgement on design solutions
	Relevant experience	Application of professional knowledge and judgement on design solutions; liaison with other consultants; liaison with other government department/utility companies
Empathy	Whether the firm provides personnel attention to the client	Timely response to client's enquiries and requests
	Whether the firm maintains client's interest at heart	Continuous progress report, short-term adjustment of programming and target achievement
	Whether the firm understands client's problem	Committee submission work to address all client's problems to get approval for the project
	Whether the firm has similar views as its client about things that are important	Committee submission work to address all client's problems to get approval for the project
	Working relationship with client	Working relationship with client

Table AI.

Corresponding author
Terence Y.M. Lam can be contacted at: terenceymlam@yahoo.co.uk