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Construction industry clients: A survey of their attributes and project management practices

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The recent growth of interest in the strategic decisions made by clients as to how to organize and manage their projects has not as yet been matched by any extensive and systematic analysis of clients' attitudes and approaches towards project management. This paper seeks to help redress this imbalance by presenting findings from a survey of 138 client organizations drawn from both the private and public sectors. Focusing upon their experiences on a recently completed, comparatively large (£1 million plus) project, the paper examines similarities and differences in the ways in which clients organize and manage their projects and assesses the impact of these practices on project performance. Differences in the type, size and typicality of the projects are also taken into account in the analysis. The main conclusions drawn from the data are that client experience has an important impact upon many of the decisions made, that strategic decisions are often internally driven as opposed to project-based, that additional work and inadequate briefing still continue to cause problems during construction, and that there is little direct evidence in favour of alternatives to traditional managerial and contractual arrangements.

Keywords: Clients, project management, contracts, organizations.

Introduction

It is now some considerable time since attention was first directed towards the managerial and contracting practices of construction industry clients in the UK. Evidence from the Wood Report (NEDO, 1975) on public sector clients highlighted how traditional contractual and tendering arrangements dominated public sector building programmes, and advocated that clients extend their range of choice to alternative forms of 'delivery system' (such as design-build contracting, selective tendering and negotiation). In a similar vein, evidence from the private sector suggested that clients were beginning to select from the wider range of alternatives available and were experiencing some greater satisfaction as a result (NEDO, 1974).

Research at this time also began to suggest that the strategic choices made by clients as to how to organize and manage their projects could have a crucial impact upon subsequent project performance (e.g. Friend *et al.*, 1974). Indeed, considerable attention in recent years has been directed towards analysing clients' strategic choices.* It is now well recognized that

* For a summary of recent research in this area, the reader is referred to the 'Profile of research projects undertaken within the specially promoted programme in construction management', published by the Department of Construction Management, University of Reading, September 1989 on behalf of the Science and Engineering Research Council.

the client's approach towards project management can have substantial positive or adverse effects upon the achievement of project objectives (e.g. NEDO, 1978, 1983).

However, it is quite clear that such a groundswell of interest has not been sufficiently matched by any extensive and systematic analysis of clients' actions, attitudes and experiences. Such evidence as does exist is often piecemeal and anecdotal (e.g. Dickinson, 1979; Mackenzie, 1979; Waters, 1978). More detailed case study evidence exists, but faces the question of how typical or representative the findings are (e.g. Stocks and Male, 1983; Bryant *et al.*, 1969; Friend *et al.*, 1974). Broader-based research exists, but tends to place emphasis upon a single or small range of variables (e.g. the form of contract, the degree of sophistication of the client).*

Valuable though all this research is in highlighting the potential impact of organizational and other factors, it perhaps presents only a limited version of the complete picture. Broader questions, such as how and why clients vary in their choice of project management system – and with what consequences – have not as yet been fully addressed. If, at the end of the day, the aim is to enable clients to make better informed choices in relation to their requirements, then it is clearly of importance that systematic information be available concerning clients' practices, expectations, patterns of involvement and criteria for assessing project outcomes. Furthermore, it is important that this database reflect the range of types of client that exist and the types of project that they commonly undertake. To achieve these aims requires categorizing the attributes of client organizations, assessing the manner in which decisions concerning project management are made and related to the type of project, investigating relationships between these variables, and assessing their relative impact on project performance and client satisfaction.

Research aims and objectives

The research reported in this paper is derived from a survey of construction industry clients in England and Wales, the aim of which was to chart features of client organizations and, by focusing upon one specific project, to gauge the impact of clients' decisions and practices upon construction project performance (for further details of this research, see Bryman *et al.*, 1988). Thus both client and project attributes would be formulated as a set of independent variables whose relationship to performance criteria would be assessed. Particular attention would be directed at client attributes (size, sector, experience, management structure), project characteristics (value, duration, location, type, complexity) and decisions made with respect to the project (objectives, form of contract, tendering procedure, selection of contractors). The aim here would be as much to examine the interrelationships among these variables as to test their effects upon performance. Moreover, a major concern would be to conduct this analysis across a sample of client organizations that reflected the variation found within the industry.

The client was defined as that organization responsible for the development of the building (i.e. the 'named' organization on the contract). In some instances, this would correspond to the prospective occupiers (e.g. a private company); in others, it would correspond to those developing the premises on behalf of current or prospective tenants (e.g. developers, local

* Interested readers are referred to the research undertaken by S.H. Wearne, V.B. Torrance, A.B. Cherns, J. Bennett, R.F. Fellows *et al.* and D. Langford *et al.* that is summarized in the above report.

authorities). The only clients to be excluded from the sample would be consortia, private home builders, the PSA, the (now-defunct) metropolitan counties and overseas direct investors.

In order to examine project management practices, attention would be focused on one large-scale (£1 million plus) project that clients had recently commissioned and completed. All new building and refurbishment work would be included. Civil and marine engineering projects were excluded, as were supply contracts and other specialist work (such as landscaping projects).

Methodology

The sample of client organizations was generated using listings from the 'Building/refurbishment' and 'Housing' subsections of the 'Awards' section of the *Contract Journal*. From a list of applicable projects (entered from September 1984 to February 1986), a subset of projects with an anticipated final completion date that fell 3–12 months prior to the planned interview dates was obtained. This would allow for some significant overrun on the contract programme and also allow interviews to be phased to correspond more or less to a comparable point in time quite soon after each project had finished. (It should be noted that the procedure adopted tended to discriminate slightly against the inclusion of projects with either very short or very long lead times.) Because the client, rather than the project, was the unit of analysis, clients with multiple projects were counted only once, with the first randomly selected applicable project being chosen. Because the method used was based on a listing of projects, the probability was increased that 'multiple' clients would be selected. Hence, the sample tends to reflect the importance of large-scale and experienced clients within the industry. A target sample of 179 organizations was initially approached. The final sample consisted of 138 clients, representing a response rate of 77%.

Once cases were selected, a telephone call was made to ascertain who would be best able to act as key informant about the organization and the specific project. This individual was then sent a letter outlining the research and this was followed up by a telephone call to establish willingness to participate. Once access had been agreed, an interview was arranged and a short pre-interview questionnaire was despatched to obtain some general information. The interviews were then based on a 40-page structured questionnaire and lasted an average of 1–1½ hours. The nomenclature and role of those interviewed varied considerably, as might be expected. They included managing directors, project managers, building services managers, property/estates managers and chief architects/engineers.

Results

The following sections present the main findings of the survey dealing respectively with clients and their projects, forms of contract used, management structure adopted and objective and subjective assessments of project performance. Because much of the data collected was nominal in form, the analysis relies mainly on frequency distributions and cross-tabulation analysis. Where ordinal data was available, correlational analysis and *t*-tests were conducted as appropriate. For ease of presentation, the contingency tables

containing the cross-tabulation results which are reported in the text can be found in the appendices to this paper.

Clients and their projects

A summary of the main sample characteristics (and comparisons with population statistics from which the sample was drawn) is given in Tables 1 and 2 below. As can be seen from these figures, the majority of clients were private industrial and commercial firms, of whom a significant minority were property developers. Local authorities dominated the public sector and accounted for most of the housing projects in the sample. In line with the geographical distribution of work within the industry, nearly half of all the projects were located in London and south-east England. Private sector projects were concentrated here, although public sector work was distributed more evenly. In terms of project completion, 108 (78%) projects had finished up to 13 months before the actual interview. Of the rest, 19 (14%) had finished even earlier and only 11 (7%) had yet to complete. Consequently, any data on performance outcomes for this latter subgroup are anticipated rather than actual.

Table 1. Client type

	Sample		Population	
	<i>n</i>	%	<i>n</i>	%
Government department	1	1	22	2
Local authority	30	22	280	25
Statutory authority	9	7	95	8
Nationalized industry	1	1	15	1
Development corporation	2	1	13	1
Housing association	4	3	31	3
Property developer	27	20	151	13
Company	62	45	459	41
Other	2	1	61	5
Total	138	100	1127	100

Table 2. Project type

	<i>n</i>	%
Industrial (factories/warehousing)	23	17
Offices (industry/commerce)	38	28
Commercial/retail	26	19
Housing	23	17
Education/training	10	7
Civic	8	6
Health	6	4
Transport facilities	4	3
Total	138	100

Clients were asked to indicate their level of experience in handling construction projects by estimating their current level of annual expenditure on new construction (which can also be taken as an indication of client 'size') and by rating on a 5-point scale the status of the focal project. The responses are given in Table 3.

Table 3. Clients' annual expenditure and project status

Expenditure	<i>n</i>	%	Project status	<i>n</i>	%
Up to £3 m	25	18	First ever	16	12
£3–7 m	24	17	Few before	19	14
£7–17 m	28	20	Regular small number	31	22
£17–50 m	32	23	Large number	60	43
Over £50 m	21	15	Entire workload	12	9
Missing	8	6			
Total	138	100	Total	138	100

Not surprisingly, the two variables were related. For most clients (80%), the projects were not of a novel or unfamiliar type. Those without previous experience of a similar type of project (20%) tended to be smaller, less experienced clients. Moreover, the projects being undertaken tended on the whole towards being of 'average' scale or larger than that considered 'typical' for the client (see Table 4).

Table 4. Size of project

	<i>n</i>	%
Much larger	39	28
Larger	32	23
Same size	37	27
Smaller	20	14
Much smaller	2	1
Not applicable	8	6
Total	138	100

In part, this distribution no doubt reflects the decision to focus on medium- to large-scale (£1 million plus) projects. Also, there was a strong tendency for smaller, less experienced clients to be undertaking a larger project than 'normal'. Finally, it should be noted that there were no differences between private and public sector clients with respect to the above variables, except that private sector clients were more likely to be undertaking a major project for the first time.

In terms of the technical nature of the projects surveyed, most were either new construction or part new/part refurbishment (69 and 16% respectively). Most were also single, one-off projects or part of a multi-phase one-off development (47 and 29% respectively). They were also mainly 'tailormade' projects (80%), speculative developments being confined to the private sector. Only a small proportion (22%) were pure 'greenfield' projects. A larger number (43%) were greenfield in the sense of being built on a redeveloped site or vacant lot

on existing premises. A further sizeable proportion (35%) involved mainly extensions to and/or refurbishment of existing premises. Again, with the exception of the speculative developments noted above, these variations in type of project were not affected in any way by the private/public sector split.

Form of contract

The three broad types of contractual system used and their distribution across private and public sector are summarized in Table 5.* There was a slight tendency for private sector clients to favour alternatives to the traditional JCT form compared to public sector clients, whose reliance on that form was particularly pronounced on housing contracts.

Table 5. Type of contractual system used

	Public	Private	Miscellaneous	Total
Management	4	14	—	18 (13%)
Design-build	6	20	—	26 (19%)
Traditional JCT	33	55	6	94 (68%)
Total	43 (31%)	89 (64%)	6 (4%)	138 (100%)

This preference was studied further by examining the association between contract type on the one hand, and project and client variables on the other. As noted above, a JCT method was prevalent on housing contracts. Moreover, *t*-tests conducted to compare the mean contract values and mean contract 'turnovers' (i.e. value per annum) indicated a significant difference in the use of JCT and alternative methods: the latter tended to be used on larger contracts (see Table 6). However, these were the only project variables that explained any difference in the use of type of contract: neither the nature of the work (e.g. new/refurbishment, one-off/phase) nor the perceived 'complexity' of the project had any bearing on the type of contract used.

Table 6.

	Mean project value	<i>t</i>	Significance	Mean project turnover	<i>t</i>	Significance
Management	£5.154 m	2.26	(0.017)	£4.859 m	3.59	(0.001)
Traditional	£2.833 m			£2.377 m		
Design-build	£4.480 m	2.20	(0.015)	£3.592 m	2.32	(0.011)

Stronger associations were found with variables measuring client attributes. Although there was no difference in use according to either client experience or familiarity with the type of work, there was some indication that the choice of method was as much 'internally driven' as 'project-determined'. Most of the clients (62%) classified the type of contract used as either

* Some variants of the three types were identified in practice but subsumed within those categories for the purpose of further analysis. For instance, design-build contracts include develop-build and design and manage contracts.

'official policy' or 'normal practice'. This was particularly the case among public sector clients. It was also the case, not surprisingly, among larger, more experienced clients for whom construction projects were a more regular occurrence. This tendency to use 'normal practice' is perhaps not unusual, considering that for many clients the projects were fairly typical in terms of both scale and type. Indeed, the larger the project for the client, the more likely was a departure from normal practice; and the more experience of a similar type of project the client had, the more they relied upon their 'normal practice'. At the same time, however, nearly half of the clients who regarded the use of that particular type of contract as 'normal practice' reported no exceptions to its use. Of the remainder, three-quarters varied their practice according to type of project, although only 18% reported that they had no normal practice and approached each project on an *ad hoc* basis. In other words, the findings here indicate a degree of consistency in choice of contract type despite variation between types of project encountered. It seems that it is as much a departure from what is considered 'typical' or 'normal' that prompts clients to eschew normal practice, as it is characteristics of the particular project *per se*. As will be seen below, this emphasis on standard practice proves even stronger when one considers the internal management organization they employ to manage projects.

Client project management

Three main generic types of project management organization were identified among the sample of clients (see Table 7). The category 'PM model' refers to situations where an in-house project management team was involved – usually led by project managers, property managers, building managers, estates managers and the like. The category 'in-house team', by contrast, refers to a traditional architect-led system. The 'MD/consultant' category refers to those cases where direct control was exerted by the chief executive or board and where the project management role was vested in an external (usually architectural) consultant.

Table 7. Type of management structure

	<i>n</i>	%
PM model	62	45
In-house team	45	33
MD/consultant	22	16
Other	9	7
Total	138	100

In addition, three general patterns were identified that described the location of the professional design team (see Table 8). Not surprisingly, there was a strong association between the two variables: clients with an in-house design team were more likely to use a traditional architect-led project management system; others relied more heavily on consultants.

As expected, the traditional in-house design and management team approach was predominantly found in public sector cases (especially local authority housing contracts); private sector clients, on the other hand, relied substantially more on internal project managers aided by consultant designers. Having said that, a quite sizeable number of public

Table 8. Patterns of location of professional design team

	<i>n</i>	%
The direct, in-house employment of <i>at least</i> an architectural or engineering design team leader/project manager	42	30
The use of consultants to undertake <i>at least</i> the architectural/engineering design function	87	63
The absence of any architect/engineer employed directly or as consultant by the client (usually in design-build situations)	9	7
Total	138	100

Table 9

	PM	In-house	Consultant	Other	Total
Management	10	5	2	1	18 (13%)
Design-build	15	6	3	2	26 (19%)
Traditional JCT	37	34	17	6	94 (68%)
Total	62 (45%)	45 (33%)	22 (16%)	9 (7%)	138 (100%)

clients (10, i.e. 23%) relied on consultants for the design work, and 12 (i.e. 13%) of the private clients used in-house design teams. Among private sector firms, it tended to be smaller and less experienced clients who adopted the 'MD/consultant' method. As might be anticipated, there was some connection (albeit slight) between internal management system and contractual type (see Table 9). Clients with internal project managers tended to underuse the traditional JCT form of contract and use alternatives more often. In particular, design-build contracts tended to be used where the client employed no in-house designers.

As noted in the previous section, clients tended not always to match contract choice to project type. The findings for their management systems showed an even stronger and more consistent pattern. Most clients (79%) classified the particular structure used in the project as either 'official policy' or 'normal practice'. This was equally true for both public and private sector clients. Nearly two-thirds of those clients reported no exceptions to the use of their standard practice. Of the remainder, various reasons were given for any departures from the norm. However, these included not only the scale and type of project, but also other internal reasons – most notably staff availability. Moreover, there was no direct association between choice of system and the technical nature of the project (new/refurbishment, complexity, etc). Again, project typicality was a factor that influenced choice of management structure: it would be projects that were smaller than normal for which alternative systems would be adopted. Furthermore, experience and familiarity with the type of work were important explanatory factors: smaller, less experienced clients or those with no familiarity of the type of work would tend not to have any 'normal practice' and thus adopt more *ad hoc* methods. Clients who were experienced and familiar with the type of work would tend to have a normal practice and then stick to it.

To summarize so far, it appears to be the case that the choice of management organization (and, to a lesser extent, the choice of contract) is heavily influenced by client attributes rather

than project variables. Whether the project is 'typical' or not has an effect. However, 'typicality' is located within the context of client experience and familiarity and is not a direct function of the nature of the project. Despite the fact that projects may vary considerably in size and type, providing they are considered 'typical' or 'normal', then they will be 'slotted into' the normal managerial (and contractual) procedures that already exist. Consequently, differences in the use of particular systems are not on the whole tailored to match specific project requirements, but rather to contain any departures from the norm. It is usually only smaller, inexperienced clients that choose their methods on a 'horses for courses' basis – and this is largely a reflection of the fact that they have to.

Project performance

Can any direct links be ascertained between the variables discussed in the last three sections and project performance? A variety of indicators were used to measure performance, including 'hard' measures of time and cost over-/under-run as well as 'soft' measures of client satisfaction with outcomes and with how the project was managed.

The respondents were asked to estimate actual time and cost outcomes allowing for the effects of bad weather and price inflation (see Table 10). Standardizing the figures in Table 10 showed that, overall, most projects in fact performed quite well. On average, they were only 17% over programme and 8% over price. A fairly substantial proportion finished under or on programme (38%) and under or on cost (35%). Indeed, over half of the projects (56%) finished less than 10% over the planned duration and cost and nearly three-quarters (73%) less than 20%. It should perhaps be noted here that the over-representation of untypically large projects in the sample (see Table 4) had no bearing on project performance: project performance was found to be unrelated to project typicality (see Appendix 2).

Table 10. Time and cost outcomes

Time outcome	<i>n</i>	%	Cost outcome	<i>n</i>	%
Under planned duration	8	6	Under contract price	20	15
Finished on time	45	33	Finished on price	30	22
Up to 10 weeks overrun	45	33	Up to £100 K over	28	20
10–24 weeks overrun	29	21	£100–250 K over	24	17
More than 24 weeks overrun	11	8	£251–500 K over	16	12
			More than £500 K over	20	15
Total	138	100	Total	138	100

The respondents were also asked to give the reasons for both delays to the programme and increased costs. Figure 1 summarizes the main reasons given for below par performance. As can be seen, much of the overspend was attributed to additional work and/or design variations. In 40% of the projects that finished over budget, the total extra cost was wholly due to extra work. It was substantially due to extra work in a further 40% of the cases. The main reasons given for delays were poor contractor/subcontractor performance as well as additional work. The interesting point to note here is the extent to which additional work ordered or approved by the client still manages to create performance problems. The

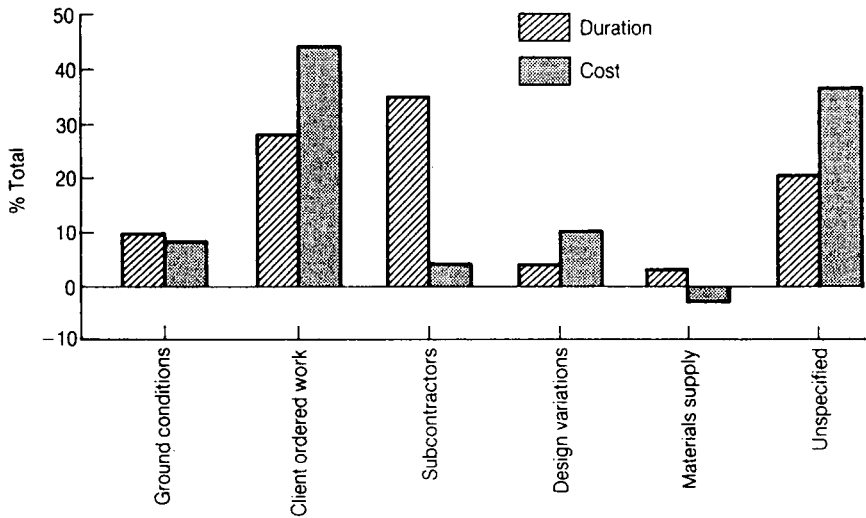


Fig. 1. Client's project: Performance indicators.

question might be raised of whether this reflects an inadequate brief, insufficient input from consultants or genuine late changes during construction. When questioned about the original brief, 38 (29%) agreed with the statement that it was 'in insufficient detail or prepared too quickly' and a further 14 (11%) were undecided. Moreover, 45 (37%) agreed that 'omissions or errors' had occurred and a further 15 (12%) were undecided. The variation in response to these questions was unrelated to whether consultants or in-house designers were employed. What these findings suggest is the tendency for at least some of the problems of additional work to be the result of inadequacies in the original brief. A second interesting point to note is that, despite the increasing specialization of main contractors in managing what is nowadays largely subcontracted work, delays caused by builders still appear to be a significant problem.

These 'hard' performance indicators were cross-tabulated directly with the variables described earlier (type of client and project, contractual method, management structure). However, only one significant association was found – namely, that clients who employed a traditional in-house architectural team had projects that performed better in terms of cost, whereas those with an internal project management system and consultants performed less well (see Appendix 2). This finding alone is of interest, because it confirms a tendency shown in the rest of the data. For instance, although the findings were not significant, it was noticeable that, on balance, traditional contractual methods appeared to be slightly better at keeping costs down and worse at avoiding overruns, whereas alternatives (particularly design-build contracts) produced the opposite results. Moreover, similar tendencies were found once client variables were clustered to enable a classification of client 'types' to be derived. In particular, it was found that large, experienced clients using project management (at 26% the most popular type in the sample) had the highest over-duration projects (10 weeks on average) and performed worst in terms of cost. In contrast, large, experienced clients using an in-house architect-led team (the traditional local authority set-up and the least popular 'type' of client) performed best in terms of time (2 weeks overrun on average) and cost.

Although these results should be treated with some caution, they do allow some interesting inferences to be drawn. In particular, the general trend of the findings appears to contradict conventional wisdom about the efficacy of project management. They also question the logic of the current trend away from employing designers direct towards hiring consultants instead. At best, there is no evidence in favour of the proposition that such systems enable better time and cost performance to be achieved. The same can be said of alternatives to the traditional JCT method of contracting. The type of contract used was not associated with time and cost performance; nor did it have any association with primary causes of delay and extra cost (i.e. additional work and contractor delays). It could reasonably be argued that these correlations are too direct and the results would be expected to depend upon the type of project (e.g. management contracting would be expected to perform better than a traditional form of contract on more complex projects). An attempt was made to assess this possibility by partialling out the effects of project complexity and other project variables. However, the results again showed no significant association, confirming the doubts that might be expressed on claims made about the efficacy of alternative contractual and managerial arrangements.

Client satisfaction

If there is no clear association between the client's method of organizing and 'hard' time and cost performance, is there a sense in which different methods have different consequences for performance in terms of more subjective criteria such as 'quality' outcomes and client 'satisfaction'? The levels of satisfaction expressed by clients across a range of performance variables are summarized in Table 11.

What is perhaps surprising here is the consistency in response: overall, clients appeared to be reasonably satisfied with the outcomes obtained and with the means selected to achieve them. While this may in part be due to *post-hoc* rationalization on the part of clients basking in the glow of a completed project, it may also in part help put the problems reported in case study work in context. This is not to suggest either that problems do not occur or that the industry should be complacent about performance. Rather, it is to suggest that concentrating research interest upon unusually complex, untypical and problematic contracts may obscure the lessons that can be learned from more straightforward, typical and less problematic projects.

In examining the correlates of satisfaction variables in more detail, two broad sets of conclusions emerged: first, that clients make *relative* judgements in assessing project performance and, secondly, that irrespective of their effect on *actual* time and cost performance, clients rate the performance of contractors differently under different forms of contract.

Taking the first point, although there were no direct correlations between *actual* time and cost outcomes and client satisfaction with outcomes, when the former were standardized a much clearer association was found, i.e. performance *relative* to anticipated duration and cost was the baseline used for appraisal. Additionally, clients who had done similar work before were much more likely to express stronger satisfaction with good time and cost performance and stronger dissatisfaction with poorer performance. Similarly, the nature of the work affected ratings of time performance: clients with new build projects would be more dissatisfied with projects that overran than would clients doing refurbishment work. Finally, although there was no difference between private and public clients in their satisfaction

Table 11. Client satisfaction

Client satisfaction with:	Satisfied or very satisfied		Undecided		Dissatisfied or very dissatisfied	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
<i>Project objectives</i>						
Overall cost	104	79	13	10	15	11
Time taken	93	68	14	10	30	22
'Value for money'	107	78	18	13	12	9
Type of contract	109	80	11	8	17	12
<i>Contractor performance</i>						
Contractor performance	92	68	16	12	27	20
Commitment and involvement	93	69	15	11	27	20
Communications and co-ordination	104	77	16	12	15	11
<i>Quality of work</i>						
Suitability for user	130	96	3	2	3	2
Functional working	127	94	5	4	3	2
Overall quality	118	87	9	7	9	7
<i>Client organization</i>						
Communications and co-ordination	112	82	18	13	7	5
Involvement and teamwork	120	88	16	12	1	1
<i>Others</i>						
Physical disruption caused	97	81	8	7	15	13
Professional team performance	104	76	24	18	9	7

reported at cost performance, private clients were more likely to express stronger dissatisfaction with delays than were their public sector counterparts. The evidence therefore appears to suggest that clients often discount or augment their assessments of performance depending on their baseline expectations.

In terms of methods of organization, there was less satisfaction expressed with both contractor performance and with the quality of co-ordination with the contractor when a traditional form of contract was used, and more satisfaction expressed with a design-build system. Strangely, however, satisfaction with the contractor's level of commitment and their involvement in the team pointed marginally in the opposite direction – an interesting contrast to the notion that design-build methods ought to engender better 'teamwork'. It should be stressed that these findings were only of marginal statistical significance. However, they were considerably strengthened when allowance was made for the typicality of the system being used (see Table 12).

Those clients for whom the system was 'normal practice' were either more complementary of contractor performance, co-ordination and commitment when performance was good or more critical when it was bad. For example, greater dissatisfaction would be expressed with poor contractor performance under a traditional method if that method was the client's normal practice. In other words, ratings of contractor performance are weighted by previous experience using similar methods, suggesting that familiarity again breeds a greater critical awareness.

Table 12. Client satisfaction (χ^2 values)

Client satisfaction with	Type of management structure	Contractual system	Use of the 'normal' contractual system
Overall performance	24.93	17.24	28.37 ^a
Commitment and involvement	24.64	17.52	27.41 ^a
Communications and co-ordination	18.83	17.32	23.69 ^a

^aSignificant at the $P < 0.01$ level.

Discussion and conclusion

It is evident that the recent growth of interest in client organizations reflects a concern that the decisions that clients make in setting up a project can have significant effects upon construction project performance. The logic of this view suggests that if clients are better informed and 'educated' about the implications of various types of delivery system, they can then select the one which best suits their construction project needs.

Hidden in this argument, however, is the presumption that clients may be comparatively new to construction project management and, therefore, somewhat unsophisticated and inexperienced in their use of project management and contractual systems. In many cases, this may be true. A small, inexperienced client who has not previously handled large-scale, complex projects, or one who faces for the first time a project of untypical magnitude and complexity, may well find this information and advice of considerable use. But not all clients are like this. In fact, the industry is one in which there are a sizeable number of regular clients whose average project is one in which they have considerable experience. Such clients typically manage a fair-sized portfolio of projects varying in scale and type, and will often have some in-house capacity and well-established mechanisms and procedures for handling them. These clients are by no means the 'naive' clients often typified in the construction management literature. Indeed, they are sophisticated and experienced enough to understand the process of construction and the potential for problems that are inherent in its uncertainty and complexity. Even their assessments of performance are informed by previous experiences and expectations based upon that experience.

Such clients approach their projects with a consistency that belies the commonly held view that 'every project is different' and thus should be treated as such. In particular, the choices of project management systems and contractual forms are as much internally driven as project-determined. There may be a number of reasons for this consistency. First, clients operate in an institutional context in which certain procedures and mechanisms may be generally deemed desirable and appropriate (cf. Zucker, 1987). This may be particularly the case in the public sector, in which public accountability is a guiding influence. Secondly, a process of habituation may have occurred by which traditionally selected arrangements, having adequately served their purpose, are re-selected in preference to the uncertainty and disturbance that may ensue with a departure from normal practice. Hence, clients rely on 'tried and tested' methods, seeking a satisfactory, rather than optimal, solution to the project management problem (Simon, 1965). Thirdly, the choice may be influenced by the direct calculation of resources and capabilities in relation to needs. Staff availability, economies of scale, etc., are here likely to be key factors in the decision-making process.

Whatever the reason or reasons for this consistency in practice, there is clearly some reluctance on the part of clients to re-orientate their systems to meet the precise requirements of particular projects. Moreover, judging by the data on performance and satisfaction, there is no great perceived need to do so, except in exceptional circumstances. A traditional form of contract may or may not be the most optimal way of handling certain types of project. But, in so far as clients have experience with this method and can make it work for them, then a satisfactory outcome may be all that is needed to help guarantee its future use.

The last several years have seen a burgeoning of interest in alternatives to traditional contracting and managerial arrangements. The age of regarding them as panaceas to the industry's problems has now well passed, and nowadays there is a much greater awareness of the importance of matching methods to suitable types of project. Yet there is still more than a hint of marketing in the writings of advocates of alternative contractual and administrative procedures. Clients are not so ill-informed as to be unable to fathom this hidden agenda. Furthermore, their experience and the results of many studies suggest that there is no great weight to the argument that any one method will help guarantee improved performance or greater satisfaction. At very best, the results are inconclusive and ambivalent. If clients continue to adopt practices that others consider suboptimal, then it is because they have been able to make these methods work to their satisfaction and also because they still remain to be convinced of the benefits of change.

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Appendix 1: Matrix of χ^2 values among client, project, organizational and contractual variables

	Client type	Client size	Client experience	One-off or phase	Location	New or refurb.	Typicality (size)	Typicality (type)	Management set-up	Whether 'normal'	Design team location	Contractual system	Whether 'normal'
<i>Client variables</i>													
Client type													
Client size	9.45												
Client experience	17.12	39.13**											
<i>Project variables</i>													
'One-off' or phase	5.17	19.99	24.74										
Site location	3.72	21.51	17.94	15.87									
New or refurbishment	1.25	10.17	3.62	14.98	75.46**								
Typicality (size)	5.85	34.99	90.89**	23.41	15.54	5.80							
Typicality (type)	2.63	23.84*	65.76**	15.51	8.43	3.49	108.55**						
<i>Organizational variables</i>													
Management set-up	40.97**	19.32	34.19**	8.51	4.59	2.33	22.70	21.17*					
Whether 'normal practice'	2.85	13.92	34.42**	12.20	13.78	4.67	70.54**	47.97**	20.03*				
Location of design team	44.83**	7.59	21.58*	7.95	7.55	0.52	51.11**	13.38*	64.71**	25.51**			
<i>Contractual variables</i>													
Contractual system	5.92	15.83	11.18	5.16	21.42*	13.11*	17.34	2.01	4.19	12.73	22.87**		
Whether 'normal practice'	7.99	21.29	59.31**	11.05	8.02	6.32	80.04**	64.78**	35.58**	114.29**	12.27**	50.63**	
Previous experience of contractor	2.30	21.53**	33.45**	4.11	0.69	0.06	23.63**	16.68**	2.60	13.25*	5.05	6.38	21.37**

*Significant at the $P < 0.01$ level; **significant at the $P < 0.001$ level.

Appendix 2. Client/project variables and their relationship with time and cost performance

	Time outcome	Cost outcome
<i>Client variables</i>		
Client type (public/private)	9.01	9.12
Client size	16.88	31.97
Client experience	11.45	23.86
<i>Project variables</i>		
'One-off' or phase	17.50	25.85
Site location	12.64	11.37
New or refurbishment	4.48	7.97
Typicality (size)	13.31	40.27
Typicality (type)	7.05	6.21
Project complexity	-0.08 ^a	-0.15 ^a
<i>Organizational variables</i>		
Management set-up	11.58	15.99
Whether 'normal' practice	10.07	5.45
Location of design team	5.46	23.43*
<i>Contractual variables</i>		
Contractual system	7.65	4.97
Whether 'normal' practice	10.61	4.64
Previous experience of contractor	1.20	10.32

Note: All statistics are χ^2 values, except those marked ^a which are Spearman rank correlation coefficients.

*Significant at the $P < 0.01$ level.