

Cost savings from outsourcing in the Australian public sector: Anecdote or evidence?

Jayne E. Bisman
Charles Sturt University

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Dr Jayne Bisman
Associate Professor
School of Accounting C2-1
Charles Sturt University
Bathurst NSW 2795
AUSTRALIA
Ph. 61 2 63384101
Fax 61 2 63384405
Email: jbisman@csu.edu.au

Abstract

A review of the literature concerning outsourcing by the Australian public sector in the watershed period from the mid-1990s through to 2000 led to the discovery of a serious evidentiary void regarding the validity of claimed cost savings. This paper provides a report on a contemporaneous, multi-method research study within this context. The prior outsourcing and cost savings research is reviewed and critiqued, and three key themes are investigated in the review and in the reported study. The themes concerned the importance afforded cost savings as an objective of outsourcing, the use (or non-use) of transaction cost data in making outsourcing decisions, and the role of cost information for ex-post decision evaluation in substantiating cost savings. The research comprised a series of qualitative depth interviews with managers from 15 Australian public sector organisations and a quantitative survey questionnaire administered to managers of a further 131 public sector organisations. The research results revealed that, despite government policy and the underlying tenets of transaction cost economics, in making and evaluating outsourcing decisions in Australian public sector organisations: pursuit of the cost savings objective is not a paramount or overriding concern; the transaction costs of external supply are rarely considered; and most organisations either do not evaluate the cost economy of outsourcing decisions after the fact or do not use information appropriate for so doing.

Keywords: outsourcing, cost savings, public sector

1. Introduction

Outsourcing involves contracting for the provision of a service or good or execution of a task, previously undertaken in-house, to a third party to perform on the organisation's behalf (Reilly and Tamkin, 1996). In the Australian public sector the word 'outsourcing' is generally used interchangeably with terms such as 'contracting' or 'contracting-out'.

During the mid-1990s through to the beginning of the new millennium Australian public sector organisations (PSOs) engaged in a frenzy of outsourcing activity, following the release of the Hilmer Report (1993). This critical cusp era also witnessed the implementation of a broad range of other reforms with implications for public sector outsourcing. These reforms included a change from cash to accrual accounting for PSOs, which came into effect in the early 1990s in local governments, but in many states and at Commonwealth level only in the 1999-2000 financial year, and which impacted the systems and manner by which these organisations could develop cost estimates for making outsourcing decisions. A spate of Federal Court decisions concerning the public sector 'pulled the rug out from under the widespread use of outsourcing during the 1990s to reduce labour costs by shifting work to employees on lower wages and conditions' (Long, 1999, p. 27). Beginning with the precedent set in *North Western Area Health Service v HSUA* and followed by a Telstra outsourcing proposal case and a home-care workers' case in Victoria, some of the cost implications for outsourcing of these court decisions were not reversed until further cases were heard in 2005, and many cost issues still remain unresolved (Catanzariti, 2005). A further complicating factor was the Goods and Services Tax, which became operative late in this period, and had significant cost implications for outsourcing because the contracts entered into by PSOs would no longer be tax exempt (Paice, 1999; Richards, 1999, p.50). The research described in this paper was carried out across 1999-2000 towards the end of this time of rapid change.

Subsequent to and during this period there was a considerable body of material clearly affirming that the pre-eminent rationale for outsourcing public sector services and goods was to economise on costs (see, for example, McDavid, 1985; Ferris & Graddy, 1986; Touche Ross & Co., 1987; ICMA, 1989; Chandler & Feuille, 1991; Jones, 1993; Messiter, 1994; CTC Research Team, 1995; Domberger, Hall & Jeffries, 1995; Walsh, 1995). Even in the private sector, cost savings were generally the key performance indicator of successful outsourcing (O'Shea, 2000, p.39). This cost savings objective was also accorded predominance in Australian government policy on contracting out (see, for example, *Local Government (Competitive Tendering) Act 1994* (Vic.); Barrett, 1997; SCPAC, 1997; Fahey, 1996, 2000), and was recognised by public sector industry bodies as the overarching consideration in outsourcing (see, for example, ICMA, 1989; Boyd, 1994). Some Australian policies and

reports of the period, together with more recent promulgations, do however, refer to a 'value for money' criterion (see NSW Premier's Department, 1995; Industry Commission, 1996; CJPF & RPRC, 1997), which does not necessarily mean acceptance of the lowest tender, but it is assumed that cost savings will result nonetheless.

While there is a range of literature on the pre-decision estimation of in-house production costs and, in particular, on the deficiencies of the accounting systems and methods used in developing these estimates (see ANAO, 1988, 1999; Carlin 2000; Walker & Walker, 2000), there seems to be less emphasis placed on investigation into aspects of transaction costs. Similarly, critical examination of the validity of ex-post cost evaluations of outsourcing decisions appears to have been sorely neglected. Together with an assessment of the importance afforded the cost savings objective in outsourcing decision-making, the research reported in this paper was closely structured around these transaction cost and ex-post cost evaluation issues.

This paper is presented in five sections. The following section provides a discussion of Australian public sector outsourcing policy and outsourcing decisions. Included in this section are overviews of the literature concerning transaction cost economics, the role of transaction costs in making outsourcing decisions, and the results and findings of prior research on cost savings from outsourcing. The research method is explained in the third section and the research results are provided in the subsequent section. The final section summarises the findings of the research and its limitations.

2. Outsourcing policy and outsourcing decisions

Perhaps the most important advance in Australian public sector outsourcing policy was the Hilmer Report (1993), which resulted in a National Competition Policy (NCP) to promote competition in the provision of public services, including competition generated through outsourcing. The NCP is contained in the *Commonwealth Policy Reform Act 1995*, and applies to local, State and Federal levels of government.

In early 1996 the NSW Government produced *Outsourcing and Contract Management Guidelines*, and in 1997 released *Service Competition Guidelines* (SCPAC, 1997), following the establishment of the Council on the Cost of Government. Other states have followed similar lines. For Western Australia (WA) these policies and mandates included the McCarrey Report (1993), the *Public Sector Management Act 1994* (WA), and *Contracting Costing Guidelines* (WA Government, 1995). In Victoria (Vic) an Outsourcing and Contract Management Unit was established in the 1990s and moves were taken to privatise (outsource) the role of the Victorian Auditor-General, under the Victorian Review of the *Audit Act 1994*.

South Australia (SA) had fairly comprehensive outsourcing policy for some time and guidelines were produced by a number of departments including the Office of Public Management. Outsourcing in Northern Territory (NT) government commenced, in large part, following the 1991 decisions of the Expenditure Review Committee (DOFA, 1996).

At the local government level, the NSW Government (1991, 1996) proposed changes for local government to require tendering for certain types of public works and, following the introduction of the NCP, produced a *Policy Statement on the Application of National Competition Policy to Local Government*. Other states have followed a similar pattern, including the South Australian local government reform report (MAGLGR, 1995) and compulsory competitive tendering in Victoria through the *Local Government (Competitive Tendering Act) 1994* (Vic).

Australian public sector outsourcing activity in the time period contemporaneous with the research results discussed in this paper was both economically significant and prevalent. The Industry Commission (1996) estimated that in the mid-1990s dollar values of outsourcing activity amounted to \$8 billion for the Commonwealth public sector, as well as \$3.3 billion and \$2 billion for state and local levels of government, respectively. Some few years later the value of outsourced information technology and communications services alone, and only at the Commonwealth government level, was \$4.8 billion (East and Partners, 2001).

2.1 Transaction costs economics

The theoretical foundations of outsourcing rest with transaction cost economics (TCE). TCE derives principally from the work of Coase (1937), who recognised that there are transaction costs involved in using the price mechanism and that organisations and markets represent alternative means for engaging in economic exchanges. Opportunism by suppliers (self-interested behaviour with guile) and uncertainty can make the price or market system costly to use and therefore firms exist to minimise transaction costs. TCE is largely the work of Williamson (1973, 1985, 1996), who contended that:

the basic hypothesis out of which transaction cost economics works is that of discriminating alignment: transactions, which differ in their attributes, align with governance structures, which differ in their cost and competence, so as to effect a transaction cost economizing outcome (Williamson, 1996, p.138).

A transaction cost results from ‘any activity which is engaged in to satisfy each party to an exchange that the value given and received is in accord with his or her expectations’ (Ouchi, 1980, p.130), and is in essence a form of agency cost.

TCE supports the notion that cost economising is the primary goal of outsourcing and taken together with explicit intent of government outsourcing policy, it would be anticipated that:

Cost savings are the most important objective of outsourcing for Australian public sector organisations.

The choice of market or hierarchy for a good or service, in a single organisation, can be described using the following equations (Morkel, 1993, p.395):

if: $C_i + C_h > P + C_t$ use the market and outsource if: $C_i + C_h < P + C_t$ use the hierarchy and produce in-house
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where: C_i	= internal cost of production	P	= price paid to buy in
C_h	= hierarchical cost	C_t	= transaction cost

As the agency theory literature demonstrates, information asymmetries and lack of property rights reduce incentives to minimise costs in public sector bureaucracies. Thus, applying TCE in the public sector context provides one explanation for the growth in outsourcing, when viewed as a means to reduce costs. One aspect of the cost equations is of particular importance for the purposes of the research described in this paper. While the outsourcing decision, according to the tenets of TCE, requires a comparison of in-house production cost to bid outsource cost, it is also a presumption that transaction costs are evaluated, since the market versus hierarchy decision is essentially one of minimising transaction cost. This aligns with government policy and so it would be expected that:

Australian PSOs outsource when the outsourcing option represents the transaction cost economising choice.

2.2 Transaction costs

In Australia, the decision by a PSO to outsource is usually made through a competitive tendering and contracting (CTC) framework. Outsourcing decisions under conditions of CTC require comparison between the cost of continued in-house provision of the service and the bids of external suppliers, plus assessment of the differences in the transaction costs associated with the two alternatives, as shown in the equations provided earlier. However, despite the extant range of government policies, there appears to be no feasible way for governments to fully prescribe the methods by which PSOs actually make outsourcing decisions, and consequently it is likely that a variety of approaches are adopted (see Bisman, 1999).

As discovered during the Industry Commission's (1996) inquiry into Australian public sector outsourcing, not only are there problems related to the methods used in practice to calculate in-house production costs, but also transition, contract management and monitoring costs are frequently omitted from analyses. Estimates of these costs need to be added to bid prices when making comparisons with the cost of in-house provision. When not adequately accounted for, and these costs often are not, they can effectively negate anticipated cost savings (ACLAEW, 1987; Paddon, 1991), and have been found to be pervasive in local government outsourcing (see, Kavanagh & Parker, 2000).

Transaction costs include the costs of searching for suppliers, and entering into, coordinating and monitoring contracts. The costs of searching for suppliers and entering into contracts can be termed 'transition costs' and include severance/redundancy payouts, legal fees, service disruption costs, staff retraining costs, overtime for supervision during the transition period, and carrying costs of unused or underutilised resources (Marlin ed., 1984; OSOE, 1994). Estimates of the size of transition costs seem to be lacking. One UK estimate put them at around 2% of total annual contract cost (LGIU, 1994), and another, also from the UK, at 10.7% (Walsh, 1991). A further UK example, based on a study of local government outsourcing contracts ($n = 448$), revealed an estimated average cost saving from outsourcing of 6%, but which was effectively wiped-out when it was determined that in preparing for competitive tendering, costs had increased by 6% (Manchester City Council, 1990).

The second aspect of transaction costs is monitoring costs. Monitoring the performance of the contractor, in terms of legal compliance, adherence to contract specifications, and acceptability of quality, is one of the most difficult aspects of outsourcing (Rehfuss, 1989, 1990). Monitoring costs can be incurred for coordination, on-site inspection or observation of contractors' work, user panels, public surveys, analysis of complaints, contractor reports, and other performance auditing techniques (see Marlin (ed.), 1984; Walsh, 1991; Herbert, 1994).

Evidence on the amount of monitoring costs is neither abundant nor conclusive. Rehfuss' (1989, 1990) review of USA public sector evidence from the 1970's and 1980's on the size of monitoring costs valued these costs in the vicinity of zero to 33% of total contract costs; with 5% to 10% a likely average. Estimates from a sample of other studies are provided in *Table 1* below.

Table 1 Research estimates of contract management & monitoring costs

Year	Country	Govt. Level	Sample Size	Transaction cost percentage	Source
1984	USA	Local	160 contracts (approx.)	Monitoring costs vary from 5-69% of overall costs	Stevens, 1984
1988	USA	Local	80 organisations	Contract admin. costs average 6.6% of contract price	Berenyi & Stevens, 1988
1996	Australia	State	? results based on 1.5% of contracts sampled	Contract management costs average 2.7% of contract value	NSW Treasury, 1997 quoted in Walker & Walker, 2000
1995-1998	Australia	State?	7,500 contracts	Contract management costs average 3% for contracts > \$1million, & more than 5.5% for contracts < \$250,000	CTC Consultants, reported by Mitchell, 1999
1999-2000	Australia	Ctw.	4 main IT contracts valued at \$732 million	Contract management costs increased as organisation size declined. Costs for 1 st year = 3.7% to 23.3% of service charges	ANAO, 2000

In the CTC Consultants study reported in *Table 1*, the researchers also found that of the 7,500 contracts studied, where PSOs monitored contract/contractor performance, cost savings averaged 12%, but where organisations did not engage in monitoring, costs increased by about 12%. Of additional note is the ANAO study (2000, p.209) which revealed that ‘the transaction costs incurred by smaller agencies in relation to the value of services received were considerable in comparison to the larger agencies’, and which supported Hodge’s (1996) contention that smaller organisations will face higher per capita costs in establishing contracting procedures.

Governments (and private companies) frequently fail to include transition, monitoring and other additional costs in making outsourcing decisions (Borcherding, 1988; Rehffuss, 1990; Chalos, 1995). More importantly, many PSOs do not have methods in place for, and cannot estimate the amount of monitoring costs (see, Prager, 1994 for a review). In many cases where large cost savings have been claimed, it has been found that the organisations concerned have not included any estimates for transaction costs (Paddon & Thanki, 1995). For example, in examining public sector outsourcing, Spoehr et al. (2002, p.49) noted that:

there were significant financial costs associated with negotiating the tendering process which were not factored in to outsourcing budgets ... in South Australia the cost of the tendering process, which delivered the State’s IT ... was later estimated at \$10 million.

The conventional wisdom in Australian PSOs was to use full cost (or a hybrid derived from it) for preparing an estimate of in-house costs of service provision. For any cost object, full cost is normally ‘the sum of its direct costs and a fair share of indirect costs [where] “fair share” is measured by the allocation basis that ... reflects the causal relationship between indirect costs and the cost object’ (Anthony, 1989, p.5).

Victorian CCT legislation requires use of full costs for in-house bids in order to make them 'comparable' with external bids. Similarly, the MAB (1992, p.26) suggested the use of full cost for Australian Commonwealth agencies. Whether such approaches promote cost effectiveness is unclear. If certain governance, management, accommodation and other allocated overhead costs will not be saved by outsourcing, then external service provision may not be the least costly option. Unavoidable costs will be common to both in-house and external provision and should be ignored in evaluating the costs of both alternatives. The guidance wrongly seems to suggest that these costs should be added to the costs of in-house provision and ignored in estimating the costs of outsourcing in order to make a 'valid' comparison.

Hoban (1995) suggested that indirect costs for government can be divided into two categories; those related to service delivery and those related to governance. It is possible that some indirect service delivery costs, as well as most governance costs, may be unavoidable in many outsourcing decision scenarios. Full costing thus has the potential to create false economies in favour of outsourcing. Even in the private sector it appears that in-house provision of goods and services is overcosted, largely as a result of arbitrary cost allocations, as well as inclusion of non-value added activities (Chalos, 1995).

The alternative view is that the outsourcing decision is the same as a 'make or buy' decision (Horngren, Foster & Datar, 2000, p.384), where the 'buy' alternative becomes attractive when the in-house avoidable costs exceed the bid price. Surprisingly, examination of guidelines for public sector outsourcing yields few examples which explicitly suggest a make or buy costing approach (for exceptions, see Seader, 1986; SOLACE & LGTB, 1988; SCPAC, 1997), although textbooks on public sector accounting invariably do so (see, for examples Funnell & Cooper, 1998; Granof, 1998; Anthony & Young, 1999).

The logic behind recommendations or requirements to use full cost approaches to developing estimates of in-house production costs is that as more services are successively outsourced, general overhead costs decline in line with the overall reduction in organisation-wide activity. There will nevertheless be some governance or other costs which are not avoidable in the long-term. However, proponents of this argument fail to recognise that baseline governance costs can actually increase as the amount of outsourcing increases (ACLAEW, 1987; Botsman, 1995), because of effort and risk factors associated with contracting (Mason, 2004). These increases are the result of escalating contract administration and monitoring costs which occur because of disruption and structural change to the organisation, training to acquire new skills (such as contract administration skills), improvements to information systems to enable proper accounting for, and monitoring of

contracts, and increased administrative burdens associated with development of contract procedures and specifications (Grayson, Hobson & Walsh, 1990; Vining and Weimer, 1990: Dunsire, Hartley & Parker, 1991). The Australian National Audit Office's (ANAO, 2000) investigation of public sector IT outsourcing brought to light the effects of rising and unaccounted for transaction costs and how these costs, in several instances, mitigated agencies' claims of cost savings and resulted in increased baseline costs.

Insourcing also has its own transaction or bureaucratic costs. These can include research and development, innovation, staff development, and management costs associated with ensuring that in-house provision of the service remains responsive and meets required standards. Transaction costs associated with insourcing can be extremely high (D'Aveni & Ravenscraft, 1994), and as these costs can be harder to identify than transaction costs associated with external supply, they are often not included in cost analysis of outsourcing decisions (Quinn & Hilmer, 1994).

2.3 Prior cost savings research

Several researchers have summarised the results of a range of cost savings studies (see Borcharding, Pommerehne & Schneider, 1982; Moore, 1987; Paddon & Thanki, 1995; Hodge, 1996; Jensen & Stonecash, 2005). Some indicative results for relevant periods are presented in *Table 2*.

Table 2 Cost savings studies

Year	Country	Govt. Level	Sample Size	Cost Savings	Source
1985-1986	Australia	Local (Vic.)	23 organisations	17% for refuse collection services	ACC, 1988a
1987	USA	Local	1,086 contracts	Between 10-40% for 80% of municipalities	Fixler, Poole & Scarlett, 1987
1987-1988	Australia	Local (SA, Tas.)	Approx. 127 organisations	9-46% depending on nature of service	ACC, 1988b
1990-1991	Australia	Local	58 organisations	Cost savings likely, test statistic not significant	Albin, 1992
1993	Australia	State	76 organisations	40.2% saving on IT outsourcing for budget-funded agencies; 5-10% savings for GTEs	Domberger, quoted in Hilvert, 1994
1976-1994	International	All levels	128 prior studies	Average 9-14%. Found that the more recent & more sophisticated the study, the less the cost savings	Hodge, 1996
Mid 1990s	Australia & overseas	All levels	Not disclosed	In 75% of studies cost savings were achieved. Savings of 10-30% achieved in 50% of studies. Where contract mgt costs could be estimated, savings averaged 16%.	Industry Commission, 1996
1995-1998	Australia	State ?	7,500 contracts	-8.6% to +46.4% depending on service type, contract value & other factors	See Mitchell, 1999

The main study of note concerns the much quoted work¹ of Simon Domberger, who concluded that outsourcing of council refuse collection and domestic services in hospitals in the UK generally resulted in a 20% cost saving (Domberger, Meadowcroft & Thompson, 1986, 1987). Domberger defended and produced results consistent with the '20% rule' in a large number of subsequent studies and publications on contracting out in both the UK and Australian public sectors (see Cubbin, Domberger & Meadowcroft, 1987; Domberger, 1988; Domberger 1989, 1993a, 1993b, 1994; Domberger, Farrago, Hall & Li, 1993; Domberger & Farago, 1994; Domberger & Jensen, 1997; Domberger, 1998). However, in one publication Domberger and Hall (1995, p.7) implicitly question the validity of the cost savings findings by stating that 'assessment of the full costs of in-house provision is often difficult and imprecise'.

Several authors have been critical of the validity and methodology of the Domberger studies (see, for example, Ganley & Grahl, 1987; Hodge, 1996; Walker & Walker, 2000). Rimmer (1991) maintained that the 20% rule was 'beyond dispute', but later (Rimmer, 1994) stated that the Australian evidence on cost savings was not conclusive, and that the long-term cost efficiency of contracting was unclear. A further four years on, Rimmer (1998) acknowledged that while there was minimal evidence on the transaction costs associated with contracting out, 'what is known of these costs indicates that, in most cases, there would still be net savings from CTC' (p.78)

In a similar vein, in an international meta-analytical study (28 studies, $n=20,131$) of contracting out government services, Hodge (1996, p.55) found the average cost reduction from outsourcing to be around 9% to 14%. However, he noted (Hodge, 1998, p.105) that this estimate did 'not include any costs associated with the contracting process, whether transitional or monitoring costs'; that is, transaction costs were ignored. Later, Hodge (1999) revised the cost savings figure down to 6 to 12% in an effort to account for transaction costs, although acknowledging that such costs remained 'largely unknown'.

The foregoing examples serve to illustrate the inconsistencies of much of the purported evidence on cost savings from outsourcing by the public sector. Generalisations about the amount of cost savings should be viewed with caution, given that even the authors of such statements concede that the methods used to calculate savings are often inappropriate or inaccurate.

In discussing the agency literature, Baiman (1982, p.191) stressed that 'the managerial accountant's role is to design the firm's pre-decision and post-decision information systems'.

¹ That Domberger's '20% cost reduction rule' is much quoted is supported by Paddon (1991a, p.12-14), Ernst (1994, p.80-81), Hayward (1994, p.26), Murfitt, Glanville & Ernst (1996, p.11) and Hodge (1996, p.26), Russell (1996, p.i), Walker & Walker (2000, p.156), and Bisman (2006).

While pre-decision cost information informs managers and can help reduce information asymmetries prior to contracting, post-decision information is also necessary. Even where the costing methods applied in the pre-decision scenario may be inappropriate for the purpose, given that the mandated objective of outsourcing is to reduce costs, the final step should be an evaluation of the cost economy of those decisions. Such ex-post cost information is also needed to enable management to protect itself against criticism of policies and actions, and to inform stakeholders, such as regulatory authorities, consumers, and the public. Some information will also be necessary to satisfy legal requirements, such as those under CCT legislation. This form of transparency and assurance is referred to as 'accountability for results' and 'its assessment is mainly by cost effectiveness measures' (Barrett, 1997, p.58). Further, such evaluation is important, not only for these purposes, but also as a feedback control useful in future outsourcing decision making. The following proposition reflects this notion:

Australian PSOs use cost information to assess if cost savings have been made from outsourcing, consistent with the cost savings objective.

There is a dearth of Australian or international research directly related to this proposition, although the limited research evidence (Smith, 1990; PSRC, 1996) is supportive of the conjecture. To examine this, and the two other propositions previously presented in this section, a multi-method study was conducted, involving a total of 146 Australian PSOs.

3. Research method

The research, part of a much larger qualitative and quantitative multimethod study, was conducted across the 1999-2000 period and included two main stages.

3.1 Stage 1: Depth interviews

The first stage comprised a series of depth interviews with managers from 15 public sector organisations, with participants selected using a maximum variation strategy to produce a heterogenous sample. The interview sample included five key informants from each of three main PSO types. The three PSO types studied were local governments, budget-funded organisations and self-funded organisations, consistent with accepted categories of PSOs (see O'Faircheallaigh, Wanna & Weller, 1999). The sample was, however, biased in favour of organisations located in New South Wales (NSW) (80%). Interview data were qualitatively analysed using thematic, pattern matching techniques. Key details relating to the interviewed managers and the organisations they represented are presented in *Table 3*.

Table 3 Interviewee and organisation characteristics

Organisation type	ID ²	Manager's position	Industry	State/Territory	Govt. level
Local govt organisations	LG1	Finance Officer	Local government	NSW (regional)	Local
	LG2	General Manager	Local government	NSW (regional)	Local
	LG3	Corporate Services Director	Local government	VIC (metro)	Local
	LG4	Town Planner	Local government	NSW (regional)	Local
	LG5	Finance Manager	Local government	NSW (metro)	Local
Self-funded organisations	SF1	Finance Manager	Electricity/Power	NSW (both)	State
	SF2	Business Manager	Tourism	NSW (regional)	State
	SF3	Manager	Conservation	NSW (regional)	State
	SF4	Director	Leisure/Recreation	NSW (metro)	State
	SF5	General Manager	Tourism	NSW (regional)	State
Budget-funded organisations	BF1	Director	Higher education	NSW (regional)	Ctw.
	BF2	CEO	Health	NSW (metro)	State
	BF3	Finance Manager	Health	NSW (regional)	State
	BF4	Purchasing Director	Justice/Corrections	QLD (metro)	State
	BF5	Accountant	Heritage/Culture	ACT (metro)	Ctw.

The depth interviews provided rich and specific data on the role of costs in outsourcing decision making within the organisations concerned and assisted in the identification of a number of critical issues and emergent themes which were then assessed for applicability in broader contexts and settings through the second stage of the research, involving a cross sectional survey administered to managers of 131 other PSOs.

3.2 Stage 2: Cross sectional survey

The survey sample was drawn from the entire population of Australian PSOs, and from sub-populations of each of the three PSO types, using government directories (eg. Commonwealth Government Entry Point, 1999; National Guide to Government, 1988-2000). A total of 675 organisations were randomly selected, including 225 organisations for each of the three major PSO types.

The survey instrument was pilot tested on a sample of 21 respondents and was post-tested using a range of reliability and validity analyses, including factor analysis and calculation of Cronbach's alpha coefficients, producing useable data sets with acceptable to very good levels of reliability. Most items (other than questions eliciting demographic information) featured five or seven point Likert scales.³

Questionnaires were distributed via post and email and two rounds of follow up were conducted. In total, 138 responses were received from CEOs, CFOs, Corporate Services

² The organisation/manager identifications (ID) provided in *Table 3* are used throughout the results section of this paper to reference key data and quotations provided by the managers.

³ A typical seven-point Likert scale eliciting attitudes ranged from 1=Very Strongly Agree to 7=Very Strongly Disagree. A typical five-point scale concerning frequencies ranged from 1=Always to 5=Never.

Managers and Competition/Contracts Managers, constituting a response rate of 22%.⁴ Seven responses were not usable, and 15 were from organisations not engaged in outsourcing activities.⁵ Usable response rates for sub-samples were; local government organisations 29.1% ($n = 64$), self-funded organisations 19.1% ($n = 36$), and budget-funded organisations 16.6% ($n = 31$).

Since response rates were far from ideal, tests were applied to assess the level of non-response bias, including the surrogate method (Oppenheim, 1966) and assessment of validity of responses compared to the population, based on the variables of organisation size, State/Territory and level of government. Tests revealed a lack of significant non-response bias in all sub-samples and in the overall sample.

Descriptive statistics relating to organisation type, organisation size (total budget), and level of government for the sample are presented in *Tables 4 and 5*.

Table 4 Descriptive statistics for surveyed organisations

	Local governments	Self-funded organisations	Budget-funded organisations	All organisations
Sample size (n)	64 (48.9%)	36 (27.5%)	31 (23.6%)	131 (100%)
Total budget (in \$)				
Mean	36.7 mill	53.7 mill	505.4 mill	155.5 mill
Standard deviation	37 mill	84.1 mill	1.3 bill	687.1 mill
5% trimmed mean⁶	33.2 mill	40.8 mill	254.1 mill	52.9 mill
Range	1.5 – 160 mill	400k – 400 mill	250k – 7bill	250k - 7 bill
Median	20 mill	19 mill	37 mill	21.9 mill

Table 5 Surveyed organisations according to jurisdiction

	Local government	State/Territory government	Federal government	All organisations
Local governments	64			64
Self-funded organisations		27	9	36
Budget-funded organisations		24	7	31
Total sample (n)	64 (49%)	51 (39%)	16 (12%)	131 (100%)
Annual budget (5% trimmed mean)	\$33.2 mill	\$107.5 mill	\$270.7 mill	

The distribution of organisations by type was skewed in favour of local governments, which constituted almost half (48.9%) the total responses. However, classified by level of government (*Table 5*), organisations represented in the overall sample were distributed consistently with underlying population proportions, as confirmed by non-response bias tests. A summary of considerations relevant to the performance of other statistical tests of the survey data appears in the Appendix.

⁴ This response rate reflects adjustments made to the initial sample size of 675, which was reduced to 631 because of organisations which proved to be non-contactable or which had ceased operations.

⁵ Non-outsourcing organisations were excluded from further analysis for the purposes of the current paper.

⁶ A 5% trimmed mean discounts the top and bottom 5% of cases, and so assists in reducing the biasing effects of extreme outliers on the calculation of the sample mean.

4. Results

The results of the analysis of depth interviews and the survey questionnaire are presented in the current section, consistent with the key themes identified in the review of literature.

4.1 Pursuit of the cost savings objective

The review of literature demonstrated the overriding importance ascribed by governments to the cost savings objective of outsourcing. Depth interview data revealed that only five (33%) of the 15 participating PSO managers believed cost savings to be the objective of outsourcing by their organisations. The other ten managers believed another objective, or multiple objectives, were pursued in outsourcing. For example, in *LG2* the preference was to outsource only a few tasks and services which were ‘traditionally’ those contracted-out by local governments. Outsourcing decisions were made on the basis of quality, not cost. In *SF2*, *SF4* and *SF5* cost was not a primary objective, since cost comparisons could not be made because organisational costing systems were incapable of accurately determining the in-house costs to perform services. In *SF1* cost was not an issue in making outsourcing decisions, rather, the removal of problem areas from management’s sphere of responsibilities and the transfer of responsibility for failure to contractors were the chief motivators. Outsourcing by this PSO was also driven, in part, by the need to meet particular legislative obligations. In *BF3* the goal of saving costs was ascribed minimal importance since outsourcing was viewed (in the manager’s words) as ‘dabbling’.

In the survey questionnaire, Question 3 provided respondents with an open-ended opportunity to describe the reasons why their organisations outsourced. While the cost savings objective was the most frequently mentioned objective of outsourcing, only 20% of respondents cited this objective and only 5% regarded it as the sole objective. Fifteen percent of respondents claimed cost minimisation, plus other objectives, were pursued and 80% of all respondents claimed that non-cost objectives drove outsourcing in their organisations.

Question 4 of the survey was designed to provide a check on responses to the preceding question and to further assess the reasons why the PSOs engaged in outsourcing. Using a 100% base, the 116 outsourcer respondents were asked to make an assessment of the percentage weighting of each of five factors in making outsourcing decisions. Descriptive statistics for each of the key factors appears in *Table 6*.

Table 5 Factorial criteria in outsourcing decisions (n = 116)

Descriptives	Quality & customer-related factors	Cost & financial factors	Contractor control & performance factors	Staffing & labour-related factors	Other Factor/s
Mean	20.9%	37.3%	11.3%	24.3%	6.2%
Std. Deviation	16.7%	21.6%	10.1%	21.0%	19.1%
Median	20.0%	33.3%	10.0%	20.0%	0.0%
Minimum	0%	0%	0%	0%	0%
Maximum	70.0%	90.0%	40.0%	100%	100%

Table 6 shows that managers claimed that cost and financial factors were the single most important consideration in outsourcing decision-making, with an average importance weighting of 37.3%; in other words these factors account for a little over one-third of the outsourcing decision. Therefore, on average over 60% of the outsourcing decision is contingent upon factors other than cost.⁷

Further analysis of the data showed that while several respondents identified cost reduction as the sole goal of outsourcing in their answers to an open-ended question (Question 3) such a result was not apparent for Question 4. Not one respondent gave cost and financial factors a 100% importance rating in making outsourcing decisions, although nine respondents⁸ gave cost and financial factors a zero importance weighting.

4.2 Accounting for transaction costs

In addition to comparing the internal costs of producing or providing a service with the purchase/bid prices associated with external supply, outsourcing decisions should also involve consideration of transaction costs.

Of the seven (47%) managers interviewed from organisations which made cost comparisons between in-house and outsource costs, three organisations always made such comparisons, three often did, and one sometimes did. The methods used by these seven organisations were analysed and the results appear in Table 7.

⁷ The data concerning each of the five factors (Table 6) were further analysed using one and two-way ANOVA procedures and *t*-tests. No significant differences were found in mean weightings given to each of the five factors according to whether organisations were small or large, or based on level of government, or the interaction of organisation size and level of government with other variables. Nor were there significant differences based on any of the demographic variables, such as organisation type and organisation location, in the weightings given to cost and financial factors.

⁸ Consisting of three local governments, one self-funded organisation and four budget-funded organisations.

Table 7 Costing methods

ID	Costing methods used in outsourcing decision making
LG3	Short-term, full costs including allocated common & unavoidable costs. Sometimes cash-based NPV comparisons were made. Transaction costs were rarely considered.
LG4	Long-term, full accrual costs & cash-based (non-discounted) comparisons were made. Full costs included allocated common & unavoidable costs. Some transaction (monitoring costs only) were included.
LG5	Long-term, full accrual costs, including allocated common & unavoidable costs. Sometimes cash-based NPV comparisons were made. Most transaction costs were included.
SF3	Short-term, full costs only. Some transaction costs were included.
BF2	Short-term, full costs including allocated common & unavoidable costs. Transaction costs were never considered.
BF4	Short-term, full costs, including sunk costs (e.g. depreciation). Transaction costs were not considered.
BF5	Long-term costs, including common & unavoidable costs. Transaction costs were not considered.

In these organisations (*Table 7*) search and transition costs were rarely included, although contract monitoring costs were more often considered. Managers were not able to provide estimates of either contract-specific or total organisational transaction costs associated with outsourcing. Survey data provided further information on these points and the following table (*Table 8*) presents relative frequencies for usage of estimates for each transaction cost type.

Table 8 Usage of transaction cost estimates (n = 116)

Transaction cost types	Always	Often	Sometimes	Rarely	Never	Don't Know	Total
Search costs	11.7%	17.1%	17.1%	25.2%	24.4%	4.5%	100%
Transition costs	25.5%	22.7%	23.6%	14.6%	10.0%	3.6%	100%
Monitoring costs	21.6%	18.9%	29.8%	14.4%	11.7%	3.6%	100%

Data reported in *Table 8* evidences that many organisations only infrequently included estimates of the transaction costs associated with outsourcing, and this is most marked in the cases of contractor search and monitoring costs. Further analysis of this data revealed that on average 14.7% of organisations rarely or never included any transaction costs. Using *t*-tests and ANOVA procedures, and ignoring the ‘don’t know’ response category for the items appearing in *Table 8*, two significant differences in transaction cost inclusions were found. Smaller organisations (mean = 3.02) were significantly more likely than large organisations (mean= 3.69) to explicitly consider search costs ($t = -2.477$, $p = 0.015$). *Table 9* concerns differences in the frequency with which organisations from the three tiers of government formally considered monitoring costs. Using a Scheffe test (see Appendix), the difference was significant at the 0.018 level, showing that local governments (mean = 2.62) considered monitoring costs significantly more frequently than did Federal government organisations (mean = 3.79).

Table 9 ANOVA: Monitoring costs and jurisdiction

Dependent Variables	Grouping Variable: Level of government	Sum of Squares	df	Mean Square	F	Sig.
Monitoring Costs	Between Groups	15.277	2	7.638	4.218	.017
	Within Groups	193.778	107	1.811		
	Total	209.055	109			

4.3 Cost savings evidence

The qualitative evidence suggested that some organisations did cost their outsourcing decisions, and regardless of the adequacy or appropriateness of the costing methods used, it would be expected that these organisations would have determined if the government-mandated cost savings objective was being achieved by making ex-post evaluations of the costs of outsourcing versus prior in-house costs.

Of the 15 managers interviewed only two (13%) were employed in organisations that used a procedure for evaluating the cost of outsourcing decisions after the fact (LG3 and LG5). Other managers offered anecdotal evidence concerning likely cost savings, such as the manager of *LG1* who believed cost savings were generally not made and cited legal reasons as the chief impediment to decision reversal. In *SF3*, while overall costs had increased as a result of some of the organisation's outsourcing activities, 'outsourcing is cheaper 90% of the time'. The manager of *SF4* was unable to determine if cost savings were actually made. *BF2* had some 'disastrous' outsourcing experiences, and in every outsourcing decision made, contractors' accepted bid prices were exceeded due to poor contract specification and lack of up-front negotiations. Similarly, in *BF1*, while the organisation engaged in outsourcing to a 'large extent', often cost savings were not made and more than 50% of the time contractors had underestimated their costs. This led the manager to conclude that contractors 'systematically' under-quoted, enabling them to secure the work and then put excess charges down to contract variations or environmental exigencies. These last two cases echo audit evidence on Australian public sector information technology (IT) outsourcing contracts (ANAO, 2000) of the period, which showed that 'tenders overstate the savings on offer for agencies' (Murphy, 2000, p.3). By way of contrast, in *LG4* and *LG5* it was perceived that contractor cost overruns were rare.

Several questions in the survey (Questions 6, 7 & 8) also addressed the issue of whether organisations engaged in post-decision evaluations of outsourcing, what evidence they collected to assist in these evaluations, and whether cost savings appeared to be achieved. Initially, respondents were asked about the frequency with which their organisations made formal, post-decision evaluations of the cost economy of outsourcing (reported in *Table 10*).

Table 10 Outsourcing decision evaluations

Frequency of formal evaluations	Overall <i>n</i> = 109 ⁹	Local government organisations <i>n</i> = 53	Self-funded organisations <i>n</i> = 29	Budget-funded organisations <i>n</i> = 27
Always	15.6%	22.6%	13.8%	3.7%
Often	32.1%	34.0%*	34.5%	25.9%
Sometimes	27.5%	22.6%	24.1%*	40.7%*
Rarely	12.8%	15.1%	7.0%	14.8%
Never	7.3%	3.8%	10.3%	11.2%
Don't Know	4.6%	1.9%	10.3%	3.7%
TOTALS	100%	100%	100%	100%

* Mean and median response for organisation type.

Table 10 discloses that relatively few organisations always evaluated the cost outcome of outsourcing decisions, and some 20% rarely or never made such evaluations. Responses in the 'Don't know' category were principally from self-funded organisations and were not included in further analysis. There were no statistically significant differences in responses based on organisation type, organisation size, or location, although there was a significant difference based on level of government (see Table 11). The Scheffe test result ($p = 0.041$) indicated that managers of Federal government organisations (mean 3.36) were significantly less likely to evaluate the ex-post cost outcome of outsourcing decisions than were managers of local governments (mean = 2.42).

Table 11 ANOVA: Ex-post cost evaluation and jurisdiction

Dependent Variable	Grouping Variable:	Sum of Squares	df	Mean Square	F	Sig.
Evaluation	Level of government					
	Between Groups	8.562	2	4.281	3.437	.036
	Within Groups	125.813	101	1.246		
	Total	134.375	103			

Only outsourcing organisations that formally evaluated outsourcing decisions ($n = 109$) were required to answer survey Question 7, which asked whether the most frequent outcome of post-outsourcing decision evaluations was that costs increased, decreased, or remained the same. Fourteen respondents to this question indicated they were unsure of the cost outcome or that evaluations had not actually been made on a cost basis, despite what they had indicated in responses to the previous question. This reduced the effective sample size for Question 7 to 95 respondents as shown in Table 12.

⁹ There were seven missing or unusable responses to this question, reflected above by the reduction in sample size from $n = 116$ to $n = 109$. This item non-response was non-significant.

Table 12 Outcome of outsourcing decision evaluations

Evaluation outcome	Local government organisations <i>n</i> = 53	Self-funded organisations <i>n</i> = 21	Budget-funded organisations <i>n</i> = 21	Total organisations <i>n</i> = 95
Costs decreased	57.4%	57.1%	47.6%	55%
Costs remained the same	32.0%	19.1%	23.8%	18%
Costs increased	10.6%	23.8%	28.6%	27%

Table 12 reveals that decreasing or unchanged costs after outsourcing were claimed by managers to be the usual outcome for almost 90% of local government organisations, while only 76% of self-funded organisations and 71% of budget-funded organisations achieved similar results. Further analysis showed no significant differences in cost outcomes of post-outsourcing decision evaluations based on organisation type or organisation size. Additionally, no significant differences were noted based on level of government or on a comparative analysis of organisations in the major Australian states.¹⁰

Question 8 was open-ended, requiring respondents to state the types of evidence that were produced by their organisations to prove if outsourcing decreased costs and/or improved efficiency. Results show that most organisations made outsourcing decision evaluations on inappropriate bases or on the basis of non-cost factors. Despite having claimed in Question 6 that their organisations formally evaluated outsourcing decisions, and in Question 7 that cost increases, decreases or unchanged costs resulted from outsourcing, 17.5% of managers stated that their organisations produced no evidence to prove if cost savings or efficiency gains resulted from outsourcing. The items of evidence noted by respondents were qualitatively analysed and coded, and results for the most frequently cited types of evidence appear in Table 13.

Table 13 Evidence types

Evidence type	Response frequency
Non-cost measures	27.6%
Prior in-house costs v. budgeted outsource costs	16.5%
Basic cost-related measures	15.0%
Actual outsource costs v. budgeted outsource costs	14.2%
Actual outsource costs v. prior in-house costs	7.1%
Benchmark study comparisons	7.1%
Cost/benefit analyses	6.3%
Other ¹¹	6.2%

¹⁰ To test for significant differences with reference to demographic variables, chi-square analyses were deemed more appropriate than ANOVA since there were only three levels of the evaluation outcome variable (that is, costs increased, decreased, or remained the same).

¹¹ All other categories of evidence accounted for less than 1.6% each of total evidence items cited, and included: comparison of in-house v. outsource labour costs, comparison of current v. future outsource costs, staffing analyses, and physical asset analyses.

As outlined in the review of literature, evidence to prove if cost savings have been made from outsourcing would involve a comparison of the prior in-house costs of providing the service with the actual costs of outsourcing for the provision of that service. As *Table 13* reveals, only 7.1% of organisations appeared to collect this information, none of which were budget-funded organisations. Comparing budgeted and actual outsource costs may also provide appropriate information for establishing whether cost savings have been made, provided that an in-house/outsource cost comparison had been made prior to outsourcing. At best then, only 21.3% of organisations produced evidence relevant to the determination of whether cost savings were derived from outsourcing (refer to highlighted rows in *Table 13*).

Table 13 shows that in assessing decisions post-outsourcing, the most frequently produced evidentiary material pertained to non-cost information. This was also the modal response for each organisation type, and over 31% of these organisations collected more than one type of non-cost evidence.¹² These non-cost measures included customer feedback surveys, staff outcome surveys, delivery time assessments, quality assessments, and client complaint statistics. These measures may help evidence changes in service quality resulting from outsourcing, but do not directly address the cost savings issue.

Comparison of prior in-house costs and budgeted outsource costs was the second most frequently cited (16.5%) ‘evidence’ for establishing if cost savings had been made, however, this comparison is invalid for the task at hand. Such a comparison should be made prior to outsourcing, and when used as an ex-post evaluative technique takes no account of differentials between budgeted and actual outsource costs.

Fifteen percent of organisations used ‘Basic cost-related measures’ (see *Table 13*). In the words of respondents, these measures were ‘*minimal*’, ‘*ad-hoc and not formally consolidated*’, ‘*not followed up to determine actual costs incurred*’, ‘*done at times*’, of ‘*limited detail*’ and involved ‘*simple calculations*’. Such measures are unlikely to provide information appropriate for establishing if cost savings were achieved.

5. Findings and conclusions

This paper has focused on a number of aspects of the pre and post-decision information used in outsourcing contexts by Australian PSOs. In particular, the research honed in on the issues of the cost savings objective, the role and impact of transaction costs in outsourcing decision-making, and the use (or non-use) or ex-post cost information in evaluating the cost economy of outsourcing decisions. The key findings were that the cost savings objective was neither dominant nor actively pursued, transactions costs were often ignored in making decisions, and

¹² Note, however, that non-cost evidence was counted only once per organisation in preparing *Table 13*.

the cost economy of decisions was rarely evaluated after the fact. These findings strongly suggested that cost savings from outsourcing by Australian public sector organisations were anecdotal (or illusory).

Only a small proportion of managers interviewed and surveyed claimed cost savings to be the objective, or one of the objectives, of outsourcing by their organisations. The relative unimportance of the cost savings objective was reinforced by the lack of consideration of the transaction costs of outsourcing, and by the lack of rigour applied in assessing if cost savings had been made on an ex-post basis.

These results may well be explained by reference to a number of subsequent studies which examined the underlying reasons for public sector organisations in Australia to outsource. In these studies, power, politics, legal environments and legislative interventions were found to be more persuasive in outsourcing decision-making than were cost containment issues or fiscal stress (see Bisman, 2003; Wise & Sciulli, 2004; Ni & Bretschneider, 2005; Young, 2005).

The principal conclusions drawn from the research are that unless or until organisations have appropriate costing systems and formally include assessment of transaction costs in budgeting for, and making, outsourcing versus insourcing decisions, and develop appropriate procedures to formally evaluate the cost outcomes of outsourcing decisions after the fact, numbers purporting to represent cost savings from outsourcing remain anecdotal and are not evidentiary.

In the five years since the research was conducted there seems to have been few advances. In terms of public sector outsourcing, Jensen and Stonecash (2005, p.767) noted that 'despite its prevalence, there is still no consensus in the academic literature on the magnitude (and determinants) of cost savings'. Further, there is a continuing 'failure of government to evaluate the impact of their outsourcing policies' (Aulich & Hine, 2005, p.35). In relating Domberger's 20% cost savings 'rule' to the current state of public sector outsourcing in NSW and Victoria, Abelson (2005, pp.30-31) concluded that 'it is hard to tell whether these savings have been maintained since then as current governments ... are not actively pursuing contracting or reporting on the subject'.

While the public sector reform and research agendas have moved on to tackle such issues as strategic linkages and alliances, relational contracting (see Seal, 2004; Schwartz, 2005), and schemes including public private partnerships (PPPs) and private finance initiatives (PFIs), many of the fundamental costing, management and transacting problems under these new arrangements remain the same, and are as unresolved as those experienced in the 'golden era' of Australian public outsourcing in the 1990s. Questions such as 'what

objectives are pursued’, ‘what costs and benefits are involved’ and ‘what is achieved’ relate equally well to new forms of public sector contracting and require intensive scrutiny.

The chief limitations of the research presented in this paper include those relating to the depth interview sample, which was skewed heavily in favour of state and local government organisations in NSW, but which was mitigated, to a large extent, by the more broadly based sample of organisation surveyed via questionnaire. The findings are contemporaneous and caution needs to be used in generalising the results outside this temporal context, or to PSOs in other nations.

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Appendix – Statistical tests

The non-normally distributed organisation size variable (based on total annual budget[♦]) needed to be recoded. Left in original code, organisation size was a continuous variable and could not be used for grouping purposes. Organisation size was, therefore, recoded into a categorical grouping variable. After recoding, non-normality of the distribution was no longer a relevant concern. In order to perform most of the required statistical tests, only a two group categorical size variable could be used to ensure that fewer than 20% of cells would have expected counts of less than five (see Bryman & Cramer, 1999, p. 127). The recoding for this two-category variable produced approximately equal numbers in each category: one group comprising ‘small’ organisations (annual budget below the \$21.9 million median of the sample), and the other group being ‘large’ organisations (annual budget above the median).

In using ANOVA, two comparison tests were applied; the Bonferroni and Scheffe tests. The Bonferroni *t*-test, based on the Bonferroni inequality, was used to counteract the effect of compounding error in conducting a family of *t*-tests. For example, when *t*-tests were used to search for significant differences between organisations from the eight States and Territories a Bonferroni-adjusted significance level of 0.0018 was used (0.05 significance level divided by twenty-eight comparisons between the eight states/territories). Other procedures are available to counteract compounding error, but the Bonferroni method is the more conservative (Glantz & Slinker, 1990, pp. 294-298).

While mean differences had been anticipated based on organisation type, organisation size, location, or jurisdiction (level of government), the expected magnitude of the differences was largely unknown and so tests for differences were based on *post-hoc* comparisons after conducting ANOVA procedures. The Scheffe test was selected for making *post-hoc* comparisons as it is ‘tough on rejecting the null hypothesis’ (Coakes & Steed, 1999, p. 73), more conservative in finding significant differences between groups, and less likely to involve making a Type I error (Tabachnick & Fidell, 1996; Hair *et al.*, 1998). It was also selected for another important reason; the Scheffe test is exact for unequal numbers of subjects in different groups (Bryman & Cramer, 1999, p. 152-153). Tabachnick and Fidell (1996, p. 48) noted that ‘as group sizes become more discrepant ... the *F* test is too liberal, leading to an increased Type I error rate and inflated alpha level’. Most of the data analysed using ANOVA procedures featured unequal group/cell sizes. Unequal cell sizes are a relatively minor concern in one-way ANOVA, but more problematic for two-way or factorial designs. A common procedure to counter unequal *n* is to randomly delete cases from groups with larger *n*. However, Tabachnick and Fidell (1996, p. 48) cautioned against doing so in non-experimental work - artificially equalising group sizes in survey research results in distorting differences and losing generalisability since differences in sample sizes often reflect true differences in the number of various types of subjects within the population. Thus, cell sizes were not adjusted. Problems of unequal cell sizes were countered by using the Scheffe test for performing *post-hoc* analysis, and by applying Levene’s test for equality of variances to both ANOVA and independent samples *t*-tests. If the variance of the dependent variable is homogenous between groups ‘unequal cell sizes should not impact the sensitivity of the statistical tests of group differences’ (Hair *et al.* 1998, p. 359). Further, to counter the effects of unequal cell sizes in two-way or factorial ANOVA, the *Type III* classical experimental or least squares approach was used. Tabachnick and Fidell (1996, p. 344-345) suggested this as the appropriate approach for non-experimental research when there are unequal numbers of cases in each cell (Bryman & Cramer, 1999, p. 213).

When two discrete, non-parametric variables were compared, ANOVA was not appropriate for testing purposes. Instead chi-square analysis was conducted. Significance was determined using Pearson chi-square and the strength of relationships tested using Somer’s *d* statistic for ordinal scale comparisons and phi and Cramer’s *v* for nominal scale comparisons.

[♦] The survey questionnaire provided information on two measures of organisation size – total annual budget and number of staff. There was a positive correlation between the two measures, significant at the 0.01 level (2-tailed), meaning that only one measure of size needed to be used. Total annual budget was chosen as a more reliable measure since in estimates of staff numbers some respondents included causal staff while others did not.