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# BENCHMARKING AND INFORMATION TECHNOLOGY OUTSOURCING OUTCOMES

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## Abstract

*Debate exists on whether outsourcing of information technology delivers sufficient benefits by way of cost savings or improved service levels (including access to skills and technologies) to warrant the management effort and any additional costs involved in developing relationships with outsourcing service providers. Evidence indicates a significant proportion of outsourcing arrangements fail to deliver the expected benefits. This paper focuses on a specific management practice - benchmarking - and its impact on obtaining benefits from information outsourcing arrangements. Survey data on information technology sourcing practices indicate that organizations that benchmark as part of their outsourcing decision making process and continue benchmarking achieve better outcomes than those that do not benchmark or that only benchmark to make the outsourcing decision. Results also suggest that benchmarking is not a mere surrogate for good management, but is a useful practice making a positive contribution to decision making and ongoing evaluation of outsourcing arrangements.*

**Keywords:** Benchmarking, outsourcing, evaluation

## Introduction

Does information technology deliver sufficient benefit to warrant the investment of resources and management effort? Should an organization provide for its information technology needs internally or obtain them from one or more service providers? How does an organization assess the benefits and costs to ensure it receives value for money? Is the management and provision of information technology different from other services used by organizations, such as cleaning or transport? These questions underlie much of the literature on information technology evaluation and management and the subset of research on information technology outsourcing.

In the early days of computing, purchasing decisions were guided by benchmarking comparisons of the capacity and throughput of different computing devices. During the 1980s the practice of 'best practice' benchmarking took hold in general management, whereby organizations compared their processes with those of their competitors or with analogous functions in other industries to discover the most efficient and effective means of performing. Both types of benchmarking sought to improve performance and productivity within organizations.

This brings us to the question addressed in this paper: Will organizations achieve better outsourcing outcomes if they benchmark? To address this question, the authors examined the benchmarking and outsourcing literature to discover the processes and issues involved, and the extent of these practices with respect to information technology. From this a number of hypotheses were developed as to how benchmarking might be expected to impact on outsourcing decisions and outcomes. A major survey of information technology sourcing practices in Australia was undertaken and the data investigated to discern the incidence of benchmarking practices in the management of information technology and to test the hypotheses with respect to outsourcing outcomes.

## Conceptual Framework

### *The Benchmarking Concept*

The computer industry has used the term benchmarking since the early 1960s to describe performance comparisons of competing processors and, later, the speed of software programs such as database management software. The concept developed by the mid-

1960s to take account of varying workloads, actual system performance, total throughput time and specific applications in the form of *application benchmarks*. Standard benchmark libraries were developed to assist in computer purchasing decision making. (Joslin 1966, Lewis and Crews 1985, Gordon 1994.) This form of benchmarking can be classified as *metric benchmarking*, using quantitative measures for comparison.

Xerox pioneered *benchmarking* as a general management tool, first applying the term to business practices in about 1979 and using the term *competitive benchmarking* in the early 1980s to describe the measurement of the gap it had found between its performance and that of its competitors (Tucker and Zivan 1985, Tucker et al. 1987, Camp 1989, Spendolini 1992). More recently, Czarnecki (1998) describes benchmarking as an important tool for measurement-managed companies who use it to develop a balanced scorecard approach for performance evaluation.

The benchmarking for performance improvement described earlier is commonly called *best practice benchmarking*, because it seeks to identify and adopt best practices or techniques for performing processes. While metric benchmarking may provide a measurement of an organization's performance compared to others (e.g. the proportion of help desk calls resolved during the initial call), it does not necessarily reveal the cause of the difference, or point to a solution. Best practice benchmarking involves a fuller investigation and is thus more likely to lead to change through incremental improvement or radical process reengineering (Gordon 1994). The qualitative approach of best practice benchmarking may explain the difficulty in finding quantitative demonstrations of its effectiveness.

Evaluation of benchmarking has primarily been through case studies (Czarnecki 1998, Zairi 1998). From a 1995 study of 111 firms that benchmark, the American Productivity and Quality Center (2000) claimed significant paybacks were achieved, but that overall only 49% of organizations (75% for 'mature' and 30% for 'developing' benchmarkers) include a cost/benefit projection in their benchmarking plans.

Motivation for IS benchmarking includes justification of performance as well as the identification of improvements to performance. Based on their 19 case studies of major US organizations, Lacity and Hirschheim (1995) observe that benchmarking is used by IS managers to demonstrate to stakeholders how they meet the conflicting goals of cost minimisation (expected by senior managers) and service excellence (sought by business unit managers and users).

The Gartner Group proposed ten most prevalent best practices in IT benchmarking and outsourcing in 2000 from its experience of a decade assessing outsourcing contracts. The assumption is made that benchmarking will facilitate the outsourcing decision and will continue in order to monitor the progress of the contract (Owen and McClure 2000). The Compass organization proposes that benchmarking should be undertaken before outsourcing to establish a datum point, during an agreement to set prices during contract negotiations, and at least every two years to keep pace with changes in technology (Hutchinson 2000).

Benchmarking for best practice is increasingly becoming pervasive in large organizations. The chief emphasis in the benchmarking literature is on processes rather than operational areas and so IT may be benchmarked as part of a process (e.g. its role in the supply chain) rather than as an operational area in its own right. However, IT benchmarking is also used to assist in evaluating information systems and to inform decision making with respect to the sourcing of IT.

## ***Outsourcing***

The literature on IT outsourcing does not present a convincing case either for or against the practice. A combination of scarce supply of some IT skills and concentration by organizations on their core business suggest that IT outsourcing will continue at significant levels. Overall, the benefits received are reported to outweigh the disadvantages, but the success rates are so low that organizations considering IT outsourcing face considerable risks. This indicates that there is much yet to be done to provide evidence with which to judge the effectiveness of outsourcing and to discover the factors that contribute to favourable outcomes.

## ***Development of Hypotheses***

Organizations that benchmark should have a better understanding of both their own performance and of the market's capabilities. This should lead those that benchmark to make informed choices about such questions as information technology sourcing. It should also enable them to monitor and evaluate the effects of sourcing decisions (Willcocks and Fitzgerald 1994, Lacity and Hirschheim 1995, Willcocks et al. 1996, Venkatraman 1997). Benchmarking organizations should therefore be more likely than non-benchmarkers to obtain benefits from their outsourcing decisions. This literature emphasizes that benchmarking should be

an ongoing management practice, not a once only exercise. Organizations that continue to benchmark after making an outsourcing decision should therefore obtain more benefits than those who merely benchmark for the decision. This leads to two propositions:

- Outsourcing outcomes will be better for those organizations that benchmark than for those that do not.
- Outsourcing outcomes will be even better for those organizations that continue to benchmark after the outsourcing decision is made, compared to those that benchmark only in order to make the initial outsourcing decision.
- These propositions lead to hypotheses 1 to 5 presented in the analysis section.

Benchmarking relies on detailed observation, measurement, and comparison, but some processes are easier to measure than others. Processes and outcomes that are more subjective or are more influenced by external factors can be said to be less amenable to benchmarking or less 'benchmarkable'. An argument could be mounted that benchmarking *per se* does not lead to positive outsourcing outcomes, but instead reflects a high level of commitment to good management practices. If this were the case, we would expect no difference in those outsourcing outcomes that are more amenable to benchmarking than other outsourcing outcomes. Alternatively, if outsourcing outcomes that are more amenable to benchmarking are more positive for those organizations that benchmark, it is likely that the process of measurement and analysis embodied in benchmarking is adding value. This leads to the further proposition:

- The process of benchmarking itself adds value rather than merely acting as a surrogate for good management.
- This proposition leads to hypotheses 6 and 7 presented in the analysis section.

## Survey of Information Technology Sourcing Practices in Australia

### Sample

A survey of IT sourcing practices was undertaken in Australia during 1999/2000. The sampling frame was created by combining a list of CIOs of key government and non-profit agencies and universities with two commercially produced lists of CIOs in large business IT sites. The resulting list (1500 sites) was sorted by a proxy measure of the size of IT function. Questionnaires were then sent to the largest 500 sites and a random sample of 500 of the remaining sites. The unit of analysis was the organization, with the CIO as the key informant. After two solicitation rounds, 240 useable responses (24%) were received. This compares very favorably with other IT outsourcing surveys, which frequently have quite low response rates.

### Variables for Analysis

A range of open and closed questions relating to benchmarking was included in the survey.<sup>1</sup> Of those who replied, 214 responded to seven closed quantitative items measuring benchmarking practices. On the basis of their responses to these items, the 214 respondents were classified into four categories:

- those who benchmarked cost, service levels or other measures as part of their decision to outsource, but not since making the decision – *benchmarkers for OS* (95, or 44.4% of valid responses)
- those who benchmarked for the decision to outsource, and also since making the decision – *continuous benchmarkers* (58, 27.1%)
- those who began benchmarking after making the decision to outsource – *benchmarking converts* (29, 13.6%)
- those who answered 'Nothing' to either or both the above categories and who did not complete any of the other possibilities were classified as *non-benchmarkers* (32, 15.0%).

Because the practice of benchmarking could not have been a cause of outsourcing outcomes for *benchmarking converts* (being after the event of outsourcing decision making) these respondents have been excluded from the hypothesis testing. The remaining three categories of benchmarking practice constitute independent samples for analysis. The sample size for analysis is  $95 + 58 + 29 = 182$ .

*Outsourcing outcomes:* Respondents were given a choice of 21 possible reasons for outsourcing derived from an earlier Australian study (Deloitte 1997), and similar to those used in Willcocks and Fitzgerald (1994). They were asked to indicate for all that apply

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<sup>1</sup>The items relating to benchmarking, omitted here because of space considerations, are obtainable from the first author.

or have applied whether they were a primary (driving) or secondary (supporting) reason for outsourcing. A later question gave corresponding outcomes, which were subsequently classified with respect to their amenability to benchmarking. Respondents were asked to indicate the level of result obtained for as many outcomes as applied to them. No guidance was given to the meaning of 'substantial' or 'moderate'. These constitute an ordinal rather than interval scale and were allocated ranking values, with nonparametric tests being used to assess the relevant hypotheses.

*Evaluation criteria for outsourcing arrangements:* The survey also included an evaluation scale with eight items stating various benefits that might be enabled through outsourcing IT and three items rating satisfaction with aspects of outsourcing, derived in part from Grover et al. (1996). Respondents were asked to indicate the extent to which they agreed or disagreed with the statements on a Likert scale from 1 (strongly disagree - negative) to 7 (strongly agree - positive). Although these are ordinal scales, they can be treated for social research purposes as though they were an interval scale, and parametric tests have accordingly been used to test the hypotheses relating to the evaluation criteria (Diamantopoulos and Schlegelmilch 1997).

### ***Analysis of Hypotheses***

The propositions outlined earlier generated the following hypotheses.

*H1 Benchmarking practitioners come from distinct populations: outsourcing outcomes for non-benchmarkers  $\neq$  outcomes for benchmarkers for OS  $\neq$  outcomes for continuous benchmarkers.*

The Kruskal-Wallis one-way analysis of variables by ranks was used to test whether the three ordinal categories of benchmarkers represent the same continuous population or have different characteristics with respect to outsourcing outcomes. Four of the seven 'benchmarkable' evaluation criteria and eight of the eleven 'benchmarkable' outsourcing outcomes were found to be significantly related to the form of benchmarking practice of respondents. None of the four less 'benchmarkable' evaluation criteria and only two of the six less 'benchmarkable' outsourcing outcomes were significantly related. This test also confirmed that the four outcomes identified as being ambiguous or not amenable to benchmarking because of their transitory nature are not related to the differing forms of benchmarking practice.

With respect to *H1* the null hypothesis is rejected; different benchmarking practices are associated with different outcomes from and evaluation of outsourcing that are amenable to benchmarking.

*H2 and H3:* Benchmarking outcomes will be better for benchmarkers for OS and continuous benchmarkers than for non-benchmarkers.

*H2 Outsourcing outcomes for benchmarkers for OS and outcomes for continuous benchmarkers will be > outcomes for non-benchmarkers.*

As the outcome measures are ordinal, the Mann-Whitney *U* test was used to test whether the separate groups came from the same population (see Table 1).

*H2* can be split into three hypotheses: that OS benchmarkers will have better outcomes than non-benchmarkers, that continuous benchmarkers will have better outcomes than both non-benchmarkers and OS benchmarkers. The results in Table 1 support the rejection of the null hypothesis in relation to continuous benchmarkers, but the null hypothesis cannot be rejected with respect to OS benchmarkers compared to non-benchmarkers.

*H3 Evaluation of outsourcing for 'benchmarkable' evaluation factors for benchmarkers for OS and for continuous benchmarkers will be > 'benchmarkable' evaluation criteria for non-benchmarkers.*

An independent samples *t* test was used to compare the different types of benchmarkers. As for the outcomes test reported above the null hypothesis can be rejected for continuous benchmarkers compared to both non-benchmarkers and OS benchmarkers, but the null hypothesis cannot be rejected for OS benchmarkers compared to non-benchmarkers (see Table 2).

**Table 1 Mann-Whitney U Test for OS Outcomes Comparing Non-benchmarkers, Benchmarkers for OS, and Continuous Benchmarkers**

	<i>Mean (from scale Worse outcome = -1, Same = 0, Moderate =1, Substantial =2)</i>			<i>Asymp. Sig. (2-tailed)</i>		
	<i>Non-bm</i>	<i>OS bm</i>	<i>Continuous bm</i>	<i>Continuous</i>		<i>Continuous bm/ OS bm</i>
				<i>bm/ non-bm</i>	<i>OS bm/ non-bm</i>	
<i>Benchmarkable outcomes</i>						
Q8b Allowed more flexible work practices	0.526	0.548	0.882	0.067	0.950	*0.019
Q8c Changed users' accountabilities	0.737	0.444	0.830	0.532	0.127	**0.002
Q8e Concentration on core business	0.913	0.836	1.269	*0.021	0.649	**0.001
Q8f Improved flexibility for business	0.579	0.627	1.055	*0.026	0.860	**0.002
Q8j Obtained better service	0.727	0.824	1.057	0.064	0.503	0.124
Q8l Rationalized assets	0.579	0.569	0.814	0.257	0.829	0.094
Q8m Reduced cost	-0.050	0.119	0.604	**0.009	0.435	**0.005
Q8o Shift from capital to operating expense	0.667	0.740	1.027	0.120	0.862	0.069
Q8q Improved cash flow	0.133	0.114	0.528	0.094	0.891	*0.011
Q8s Better match resource supply to demand	0.700	0.922	1.189	*0.026	0.313	*0.041
Q8u Access to better/more technology	0.773	0.829	1.080	0.072	0.792	0.063
<i>Less benchmarkable outcomes</i>						
Q8a Access to services could not provide internally	1.276	1.310	1.418	0.448	0.805	0.523
Q8g Dissatisfaction with internal providers	0.313	0.333	0.385	0.795	0.866	0.586
Q8k Enhanced management control	0.650	0.651	1.039	0.092	0.968	**0.006
Q8n Reduced staff numbers	0.450	0.683	0.796	0.123	0.217	0.436
Q8r Better use of in-house personnel	0.818	1.061	1.280	**0.010	0.187	*0.047
Q8t Access to better/more skills/expertise	1.077	1.310	1.375	0.052	0.115	0.661

\*Significant at .05 level. \*\*Significant at .01 level.

**Table 2. t-test for Evaluation Criteria Amenable to Benchmarking and Benchmarking Practice**

<b>Benchmarkable evaluation criteria</b>	<b>Mean</b>			<b>Sig. (2-tailed)</b>		
	<i>Non-bm</i>	<i>OS bm</i>	<i>Continuous bm</i>	<i>OS bm/ non-bm</i>	<i>Continuous bm/ non-bm</i>	<i>Continuous bm/ OS bm</i>
Q7a OS has enabled organization to refocus on core business	3.815 (N=27)	3.667 (72)	4.636 (55)	0.675	*0.016	**0.000
Q7b OS has enhanced organization's IT competence	3.786 (28)	3.875 (72)	4.455 (55)	0.815	0.079	*0.046
Q7f OS increased organization's control of IS expenses	3.074 (27)	3.347 (72)	4.073 (55)	0.384	**0.003	**0.003
Q7g OS reduced risk of technological obsolescence	3.370 (27)	3.528 (72)	4.148 (54)	0.668	*0.030	*0.024
Q7h OS increased organization's access to key information technologies	4.036 (27)	3.778 (72)	4.536 (56)	0.464	0.156	**0.007
Average benchmarkable	3.616	3.639	4.369			

\*Significant at .05 level. \*\*Significant at .01 level.

H4 and H5: Benchmarking outcomes will be better for continuous benchmarkers than for benchmarkers for OS.

If continuous benchmarking is better than one-off benchmarking, then:

*H4 Outsourcing outcomes for continuous benchmarkers will be > outcomes for benchmarkers for OS.*

The results reported in Table 1 support rejection of the null hypothesis.

*H5 Evaluation of outsourcing for 'benchmarkable' evaluation criteria for continuous benchmarkers will be > 'benchmarkable' evaluation criteria for benchmarkers for OS.*

The results reported in Table 2 support rejection of the null hypothesis.

H6 and H7: A factor other than benchmarking is responsible for outsourcing outcomes seemingly associated with benchmarking practice.

*H6 Outsourcing outcomes for 'benchmarkable' outcomes will not differ significantly from those for less 'benchmarkable' outcomes.*

*H7 Evaluation of outsourcing for 'benchmarkable' evaluation criteria will not differ significantly from those for less 'benchmarkable' evaluation criteria.*

From Table 1 it can be seen that only two 'non-benchmarkable' outcomes appear to be related to benchmarking practice. Of these, 'enhanced management control' is probably related to the 'benchmarkable' outcomes 'concentration on core business', 'better match resource supply to demand' and the various cost-related outcomes. None of the less 'benchmarkable' evaluation criteria were related to benchmarking practice. If management was so good as to achieve favourable results in the 'benchmarkable' outcomes and criteria regardless of the practice of benchmarking, it could also be expected that outcomes would improve for less 'benchmarkable' outcomes and criteria such as 'access to services not provided internally' and 'dissatisfaction with internal providers'. This was not the case. The fact that not all outcomes and evaluation criteria are directly related to benchmarking reminds us that benchmarking is not some sort of outsourcing panacea, although it is a valuable tool for managing outsourcing relationships.

## Conclusion

This research adds credence to the axiom 'what gets measured gets managed'<sup>2</sup>. Organizations that have a culture of continuous benchmarking achieve significantly better outcomes from outsourcing and have a more positive attitude to 'benchmarkable' evaluation criteria than do those organizations that either do not benchmark or do it as a once-only exercise as part of the outsourcing decision making. The data suggest that once-only benchmarkers may be slightly better off than non-benchmarkers, but there is insufficient evidence to reject the hypothesis that there is no difference between the two.

Furthermore, benchmarking appears to add value in its own right, it is not a mere surrogate for good management. Managers identify benchmarking as a critical factor that needs to be deployed well in order to assist in the making of outsourcing decisions, managing the relationship with the service provider(s), testing the market, and preparing for transition to different service providers.

While some organizations have adopted benchmarking since outsourcing, many have failed to continue benchmarking once the outsourcing decision is made. The findings suggest that managers would gain advantage by adopting a policy of continuous benchmarking for their information technology services, whether supplied internally or obtained from external service providers.

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<sup>2</sup>Variously attributed to W. Edwards Deming and Peter Drucker, this appears to have its origins in Kelvin's observation 'When you can measure what you are speaking about, and express it in numbers, you know something about it; but when you cannot measure it, when you cannot express it in numbers, your knowledge is of a meagre and unsatisfactory kind: it may be the beginning of knowledge, but you have scarcely, in your thoughts, advanced to the stage of science.' William Thomson, Lord Kelvin, *Popular Lectures and Addresses, 1891-1894*.

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