

Advice on Deciles in IT Benchmarks

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Introduction

There are a (very) few outsourcing contracts that commit an outsourcer or other Service Provider to meet a pricing target set in terms of deciles. For example, the outsourcer might be committed to be in the best decile¹ of the prices offered for similar services, by the end of year 3 of the contract, with compliance to be decided by a benchmark comparison of the outsourcer's prices against the market.

Best Decile or Cheapest Decile pricing (sometimes confusingly called Top Decile or Upper Decile pricing) has real dangers for the relationship between Service Supplier and Service Receiver, some of which are summarised below in **Appendix 1: The Commercial Problem with Cheapest-Decile Pricing**. But in spite of its dangers it is a fact of life. This paper therefore offers some basic advice to those who are *either* considering entering into such a contract *or* approaching a benchmark.

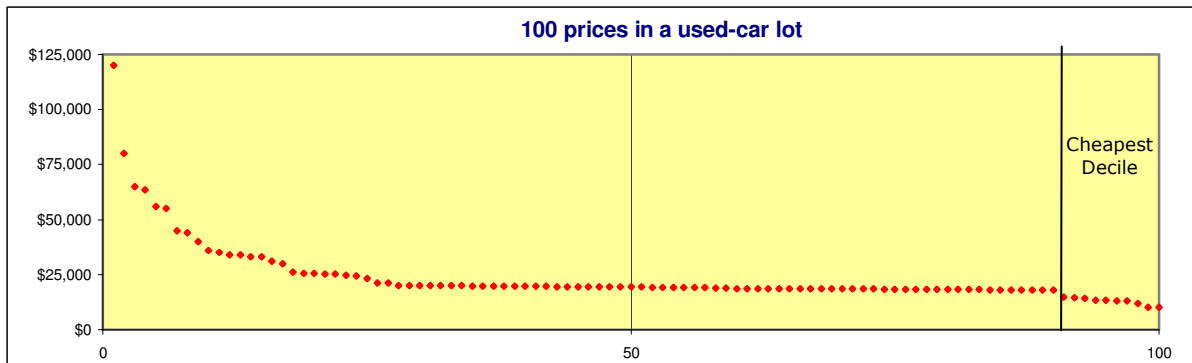
It reminds the reader of precisely what the word 'decile' means. It also explains why – perhaps surprisingly – it is necessary to agree on how it will be calculated in advance of doing a benchmark.

I do not discuss here the crucial matter of how accurate or otherwise market price data might be – that is a minefield in itself.

What decile means

Unfortunately not everyone remembers the exact meanings of statistical terms from their schooldays: and I know of deals worth millions or hundreds of millions where it is quite clear – though never confessed – that those who put the deal together thought they knew what they were signing up to, but didn't.

Decile. If a set of items each having some value are arranged in value order, the deciles are the nine values that divide the set into ten parts (intervals), each containing one tenth of the items under consideration; *or alternatively* the deciles are the ten groups of items comprising such an interval.



To illustrate: The cheapest decile is the **line** between the 10th and 11th cheapest of the 100 cars in the lot; *or alternatively* it is the **set** of prices to the right of that line.

(As an aside, two other simple but often misused terms / concepts are Median and Mean, which are explained in another paper.)

¹ There was a rush of enthusiasm among some for such deals some time ago, but I know of almost none in the last few years. Best practice now (2009), as generally agreed among all the top benchmarking experts, is to compare the supplier's prices with the arithmetic mean of prices from half a dozen or so closely matched peers (and of course normalize for all material differences). Some contracts incorporating deciles are still in force, however.

The difficulty of calculating 'decile'

Decile is a statistical term, and there is universal agreement on exactly what it means when applied to large samples such as human populations. For example, suppose the incomes of 50 million people were known. By the second definition of decile given above, the lowest decile would be the **set** of the lowest 5 million incomes, and by the first definition it would be the **line** or **value** between the 5,000,000th income and the 5,000,001st. Neither definition is subject to the slightest doubt. And since the difference between the 5,000,000th income and the 5,000,001st will for any practical purpose be zero, the decile boundary value is precisely known.

But for small samples, there is no general agreement on what 'decile' means.

This is not merely an academic problem. For a decile benchmark, a benchmarker will typically offer data from a dozen or so reference-group peers per category of service being benchmarked. If you are a service supplier committed to match 'best decile' prices taken from a suitable reference or peer group - where is the top decile, i.e. your target price, given a list of a twelve prices with gaps of significant size between them?

Of course it is easy to come up with a method that works. The problem is that not everyone comes up with the same one.

Consider for example the following list of 13 unit prices charged for some service by one supplier's peers. The range (100% difference between highest and lowest) and distribution (a pack of similar prices plus a couple of rather cheaper ones) are typical of what might crop up in a decile benchmark report.² So - what is the Best Decile price?

| Unit prices from reference/peer group |
|---------------------------------------|
| \$1000 |
| \$1100 |
| \$1500 |
| \$1550 |
| \$1600 |
| \$1650 |
| \$1700 |
| \$1750 |
| \$1800 |
| \$1850 |
| \$1900 |
| \$1950 |
| \$2000 |

Table 1

Most benchmarkers use the PERCENTILE function in Microsoft's Excel spreadsheet program (see Appendix 2 below) which places the 10th percentile, i.e. the 1st decile, at \$1180.

² For the more statistically minded: \$1000 is 2.2 standard deviations from the mean price \$1615, and as such could look like an outlier that should be removed. But this is not necessarily so. This list could itself be the result of removing outliers from an earlier longer list, for example by removing all values differing from the mean by more than n standard deviations.

But different benchmarkers do the calculation differently. For example, Meta Group's³ methodology, which had a very healthy bias towards removing outliers, said that the upper decile group must contain at least three prices that must have been selected from at least twelve; so in the table above the cheapest decile must contain \$1500, and therefore the service provider's target price is \$1500.

The possible consequence: damaged relationships

Thus there may be more than one possible value for a particular 'cheapest decile price', and therefore several different target prices for the service supplier, all equally defensible. The differences may easily add up to several percentage points (which of course could mean tens of millions of dollars) in an individual benchmarking exercise.

This raises the prospect of a service supplier and a service receiver – i.e. the two parties to a contract which involves benchmarking – independently shopping around to find the definition that best suits them, and ending up in a destructive dispute.

Solutions

As a general principle, service suppliers and service receivers should always get EVERYTHING about benchmarking agreed up-front that they can agree. Things that cannot be known long in advance – what data to include, who the reference group or peers are, etc. – can be agreed at given milestones throughout the process, so that at the end there are no questions, no arguments, no surprises, just findings that everyone understands (especially as regards limitations on accuracy and applicability).

Specifically:

- If best-decile pricing is part of the contract, then as early as possible (i.e. in the contract, or at least before the benchmarker is selected) agree with your counterparty a minutely detailed description of how best-decile target prices will be calculated. Take care to devise or select the best calculation method bearing in mind the **long-term business objectives** of both parties. The method used by Meta Group is the best I have seen, because it was devised to take into account the realities of the quality of available data on market prices.
- Understand that there are more unrealistic and unrepresentative data ('outliers') in the benchmarkers' databases than they like to admit, with a bias towards the cheaper values. Agree a screening method with your counterparty.⁴
- Impose these two elements of how to arrive at best-decile prices on your benchmarker, or select your benchmarker from those who will use them.

In summary, the best advice to those who have to deal with best-decile is to avoid it. If you can't avoid it, then:

(a) select a method for calculating the best decile,

(b) do it well in advance,

(c) do it together with your contractual counterparty, and

(d) do the above in great detail and with great care. It really, really matters.

³ Meta Group was acquired by Gartner Inc. in 2005.

⁴ In practice outliers are usually better removed by eye and common sense than by mathematics. Charles Symons, one of the foremost authorities on software metrics in the world, says "Project performance is not random and outliers do not occur by chance. Usually the measurement is suspect or there is some special reason why the result is exceptionally high or low. Also, real-life benchmarking datasets are so often very highly skewed with the values clustered towards one axis that using standard deviations can make little sense."

Appendix 1: The Commercial Problem with Cheapest-Decile Pricing

A receiver of outsourced I.T. services needs to be confident that they are getting at least as good a deal as if they had chosen any other outsource supplier, and certainly better than if they had not outsourced at all. The solution is benchmarks, and a best-decile deal sounds ideal.

Best-decile pricing does not of course look so attractive to the suppliers: nevertheless fierce competition has occasionally driven them to it, and this has put their pricing expertise under severe strain. For one thing, it is not simple to calculate exactly what best-decile pricing actually means (see above). And how can they know what kind of deal their competitors will be offering at the time the next benchmark is done? Ultimately it requires an act of faith that whatever the competition is doing, they can do better.

But obviously not all suppliers can do better than their competitors, and not all prices can be in the cheapest decile or even in the cheaper half. This raises the prospect of prices being driven further and further down into unprofitability by customers invoking the price correction mechanism – with each new price going into the benchmarking organizations' databases and imperceptibly forcing prices lower still.

This sounds like good news for the customer, but it is not. Outsource suppliers will find ways to stop their losses, either by reducing the quality of the service they give (wriggling out of SLAs, deferring expenditure on new technology, etc.) or at worst finding some way to escape from the contract altogether. Either way the relationship between supplier and customer, which both hoped would be a mutually beneficial win-win partnership, is ruined, and the reputations of those responsible are damaged.

Appendix 2: Microsoft's Excel

Microsoft's Excel spreadsheet program includes a PERCENTILE function. To use it to calculate the Top Decile from the above list, do the following.

- a. Enter the above 13 values into cells A1:A13 in a blank worksheet
- b. Into another cell, type: =PERCENTILE(A1:A13,0.1)
- c. Press Enter

Notice that what is returned is a value (1180), not a range of values: i.e. the boundary of the Top Decile range has been precisely positioned. It works as follows.

1. If there are 11 peer prices Excel will pick the 2nd price in the list as the target price.

To try this, change A:13 to A:11 in step b above: the result will be 1100. Excel has divided up the 11 values so that there are exactly 10 spaces between them – very easy when there are exactly 11 (or 21 or 31 or 41 etc) values.

2. If there are less than 11, Excel will position the decile at a point interpolated smoothly between the 1st and 2nd values.

3. It will even offer a value for the top decile of only (say) four values – even though the idea is essentially nonsensical.

The consequence is that for less than 12 peer prices, the Excel method is sensitive only to the 1st and 2nd lowest prices in the list. In practical fact benchmarkers seldom offer more than half a dozen peer prices.

Eliminating outliers is crucial

It is **crucial** to have a robust and sceptical method of eliminating outliers. To appreciate the importance fully, try the following in a blank spreadsheet:

- Enter the prices \$10 and \$20 into cells A1 and A2.
- Enter **any** prices higher than \$20 into cells A3, A4 ... A10.

Into another cell, type: =PERCENTILE(A1:A10,0.1)

You will see that the decile price is \$19, **regardless of whether the highest eight prices** (in cells A3 to A10) **are hundreds or even millions**. In fact the only prices that affect the decile price at all are the two lowest.

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