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Management Advisory Services Forum

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MANAGEMENT ADVISORY SERVICES FORUM

Gentlemen:

Generally, I am attempting to allocate a fixed, monthly cost to my company amongst various departmental users in some sort of equitable fashion. All I have at my disposal is a small sample of their actual usage.

Specifically, I am purchasing a communications network from AT&T who will charge me a fixed monthly rental, independent of volume, usage, etc. Now I must break this cost down amongst the various users of the network. AT&T will provide me with a monthly sample (small) of each department's actual usage (number of cables, time duration, destination, etc.).

I have in the past read of various techniques to "optimally" perform this allocation. These techniques were quite sophisticated mathematically (using linear programming, dynamic programming, etc.).

Do you know where I might obtain some appropriate references to help me. Thank you.

The first reply received came from from the New York office of a major national firm:

The two points I would make relative to the inquiry on allocating

network costs to user departments are as follows:

1. Since the total cost to the company is fixed for each time period, there is no "optimal" allocation, in terms of any economic objective. Therefore, the mathematical programming approach is inappropriate.

2. Any allocation of the fixed cost should relate to the actual or estimated usage by each department and the cost impact of the way in which the network is used by each department, e.g., time duration, destination, etc. This would be analogous to the cost algorithms used by commercial time sharing vendors to determine the billings to each user. In other words, *the mix* of input/output time, file storage, file manipulation, terminal connect time, use of central processor, etc., for a given application will determine the cost for that particular usage based on the relative weights given to each component.

The other answer to the query came from the headquarters office of a large regional firm:

I'm afraid I have to answer the reader's question with a question: Is the sample taken by AT&T a

"random" sample? If it is truly a random sample the reader need not worry about its apparent smallness: it can be safely used as a reasonable image of total usage to assign the total fixed cost to the various users.

Statistical sampling is an accepted discipline and we use it extensively in our audit work. (For example, we recently used a random sample of 453 to accurately audit a population of 46,000 installment loans.)

Even if AT&T's sample is not a random sample, I don't see where the reader has any choice but to project it in the absence of a built-in project control system (unless he is willing to take on the burdensome task of forcing each user to maintain a detailed usage log). Any arbitrary formula for allocation of total cost is bound to be less accurate than the sample projection.

The optimization formulae referred to by the reader are used to find the economically best way to allocate limited resources (supply) among multiple users (demand). Since the optimum allocation will probably bear no resemblance to his actual usage, I don't think there is any application here.

PANEL OF ADVISERS:

Under the auspices of MANAGEMENT ADVISER, a panel of management services advisers from leading accounting firms have agreed to answer to the best of their ability questions about any area of management advisory services

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with which readers would like help. Both questioners and advisers will remain anonymous. One or more of the following members of our panel are responsible for the answers published in this department:

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