The importance of operations management problems in service organizations

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Abstract

This article reports on the research to empirically determine which operations management problems are the most important to small service organizations. The authors asked managers of service organizations to rank a set of operations problems according to their relative importance using Q methodology. In this article, Q method is explained, significant factors are analyzed, and explanations are offered for the ranking of the operations problems. The results indicate that forecasting, quality management, and resource utilization are important operational issues for service organizations. However, the results also indicate that facility location and layout, waiting line systems, and distribution requirements planning were for the most part unimportant to the respondent service organizations. In addition, Schmenner's service typology does not provide an explanatory basis for the variations in the factor results. Lastly, the results are used to suggest operations management techniques that should be taught to students who are expected to work in service organizations upon graduation. © 2002 Elsevier Science Ltd. All rights reserved.

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1. Introduction

Service organizations have many problems and challenges that can be addressed by operations management methods. However, little research has been done to investigate the importance of the operations problems and the methods used to address these problems in the service sector. This paper investigates the first of these two issues; the operational problems that service organizations consider most important. The results of this research can then be used to address the second of these two issues; the operations management methods that would be most useful to service organizations in addressing these problems. This information can then inform educators as to what they should teach as they work to adequately prepare their students for successful careers in service organizations.

Studies specifically devoted to the employment of various operations management methods in industry have been conducted. Shannon et al. [1] reported a ranking of 12 such

techniques by practitioners and academics combined in descending importance of usage. Thomas and DeCosta [2] and Forgionne [3] surveyed only practitioners who consisted of larger corporations in the US who ranked a number of methods in descending frequency of use. These practitioners also ranked the types of planning and decision-making issues, that these techniques were designed to support according to the descending frequency with which these issues were addressed. The research of Shannon et al. [1], Thomas and DeCosta [2] and Forgionne [3] focused on the importance or frequency of usage of techniques rather than the importance of the problems. In addition, they did not consider service organizations separately from manufacturing organizations. Literature concerned with the application of these methods to *service* operations issues appears to be generally limited to a specific kind of application (e.g., [4–6]) or reports on deliverables devised and constructed for consulting jobs (e.g., [6–8]). There is clearly a lack of investigation of operations problems that are important to service organizations.

In our research, a typology was used to separate service operations into categories to test the importance of different operations problems in different types of organizations.

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Several ways of typing service organizations have been suggested — Lovelock [9], Schmenner [10], Heskett [11], and the U.S. Department of Commerce — Office of Service Industries. The authors selected Schmenner's service process matrix typology that categorizes service operations into *service factories* (1), *mass services* (2), *service shops* (3), and *professional services* (4) according to a sequence of overlappings in their respective degrees of labor intensity and customer interaction/customization. Schmenner [10] proposed to demonstrate the commonality of management problems across service industries with his matrix. Since any one of these four service industries must necessarily be both similar and/or different from the others in degree of labor intensity and customer interaction/customization, one would expect its problems to be both similar and/or different from the others in the same way. Thus, Schmenner's service process matrix provides a convenient and useful heuristic by which to organize the data collected and statistically analyze the results generated.

Q method was used to determine the importance of operations problems to service organizations in this research. Q method was selected because the study sought to determine the operations problems that were the most important to service organizations. In addition, a tool that forces the respondent to be discriminating was desired. Although tools such as a survey utilizing the Likert scale also achieve a similar result, they do not require the user to rank the operations problems with respect to each other. The Q methodology was seen as unique in its ability to both require the user to rank the operations problems in terms of their own importance and their importance with respect to other operations problems.

Q method possesses advantages over other statistical methods for the researcher. One advantage of particular importance is that it does not require large samples (e.g., $n \geqslant 30$). In Q methodology, it is necessary only to have enough subjects to establish that a factor exists [12]. According to Benedict [13], "one quickly reaches the point where the testimony of great numbers of additional informants provides no further validation". This means that a large sample size and a large response rate are unnecessary. Another advantage as mentioned earlier is that the subject is forced to make difficult decisions as he sorts the Q sample because each operational problem is considered with respect to the others. The method also allows investigation of an issue that can be subjectively addressed, such as the importance of various operational problems to an organization. In addition, the method and Q sample do not require a pre-test because they seek to determine something that is subjectively interpreted.

2. Q methodology: background

The authors use Q methodology as presented and interpreted by Stephenson [14–16], Brown [12,17] and McKe-

own and Thomas [18]. Q methodology is used to systematically examine the importance of problems related to service operations because it places the decision maker's subjective perceptions of the most and least important operations problems as central to the analysis [18]. This article does not include a complete description of Q method — its nuances and statistical methods; there are many sources of information on Q method. Brown [12], and McKeown and Thomas [18] cover these topics in great detail. *Operant Subjectivity*, the journal of the International Society for Scientific Study of Subjectivity, is an excellent reference. There is a Q method community that participates actively and regularly in discussions on the Internet and at the annual Q method conference. In addition, the current software available for Q methodology analysis, such as PCQ [19] and Q method [20], simplify the statistical processes considerably. Mathematically, Q method is not significantly different from factor analysis; the difference is what is measured. Factor analysis is,

> a method of expressing data linearly in terms of factors which are of special relevance so far as the construction of appropriate models is concerned. For example, the scores of n individuals obtained on K tests may be related linearly to such relevant factors as arithmetic or verbal facility. [21, p. 38]

Whereas, Q method,

> enables the respondent to model his or her-viewpoints on a matter of subjective importance through the operational medium of a Q-sort. This 'modeling' is accomplished by a respondent systematically rank-ordering a purposively sampled set of stimuli, namely, a Q-sample, according to a specific condition of instruction... Once viewpoints are modeled in Q-sorts, data analysis occurs with the intercorrelations of the N Q-sorts as variables (hence persons, not traits or Q-sample items, are correlated) and factor analysis of the $N \times N$ correlation matrix. Resulting factors represent points of view and the association of each respondent with each point of view is indicated by the magnitude of his or her loading on that factor... Interpretation of the factors is advanced in terms of consensual and divergent subjectivity, with attention given to the relevance of such patterns to existing or emerging theories, propositions and the like. [18, p. 12–13]

We now provide a brief description of the method. First, the user gathers a sample of statements from the population of statements on the subject in question that are of concern to the organization (e.g., operations problems). Then the user selects a sample of these statements (the Q sample). There is no set number of statements to include in the Q sample. Next, the Q sort is administered to the subjects. When