



# Measurement of the performance of an investment bank using the operational competitiveness rating procedure

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## Abstract

The Hong Kong branch of an international investment bank hired additional staff in anticipation of increased business activity that eventually did not quite materialize and management was concerned about the effect of that decision on the bank's overall performance profile. This paper summarizes a study we carried out to address two related questions using only the available data at the time: (1) what is the direction of the overall performance trend and (2) how serious has the impact of the incremental costs of hiring additional staff been on the Bank's overall performance? The discussion in this paper focuses on the construction of the bank's performance profile using a new performance measurement method called operational competitiveness rating analysis (OCRA). The paper also includes comparisons of OCRA and data envelopment analysis (DEA) ratings and profit scores to show the validity support among the three approaches as well as underscore their differences. © 1999 Elsevier Science Ltd. All rights reserved.

*Keywords:* Performance measurement; OCRA; Efficiency/productivity analysis; DEA

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## 1. Introduction

Asia-One Bank<sup>2</sup> (AOB), the Hong Kong branch of an international investment bank, is the leader in Hong Kong in the documentary credits business. This business of AOB is handled by its largest operations unit, the Trade Finance Department (TFD). In 1991, a major competitor of AOB closed its operations in Hong Kong and AOB managed to successfully absorb most of its former competitor's business during the two years that followed. At the end of 1993, AOB had about 75% of the Hong Kong market share of the documentary credits business with that Asian country.

This, in turn, caused a substantial increase in the volume of transactions and TFD decided to hire additional staff to bring the number of employees in the Department from 15 at the end of 1991 to 24 in October 1993. Forecasting a 26% increase in its transaction volume in the following year, TFD employed five additional staff in November 1993, corresponding to just over 20% increase compared to the previous month, to cope with the expected expansion of business. However, the actual increase in business volume that was realized in 1994 was only 16% more than that in 1993. This percentage represented an increase much below what had been anticipated; it was even lower than the percentage by which the number of staff had increased. All these numbers seemed to imply that TFD's operations in 1994 were less efficient than in the previous year. However, the management could not tell whether the operational performance of TFD improved or worsened in 1994, nor could they tell the reasons for any change.

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<sup>2</sup> Asia-One Bank is a pseudonym for an actual bank.

Since the 1980s, the service sector has become much more important to Hong Kong's economy than manufacturing in terms of employment, revenue, international trade and production costs. This change, coupled with the rapid developments that took place in information technology, has caused a significant shift in the areas where Hong Kong has had to compete with the other economies of the Asia-Pacific region. Just as importantly, the nature of competition has changed from being based primarily on price to one that is staged on a range of factors such as quality, product and service innovation and response to customer needs. Therefore, businesses in Hong Kong like AOB are now facing greater challenges than ever in meeting the demands of their increasingly more knowledgeable customers and employees in a constantly changing socio-economic and political environment. The underlying uncertainties and risks have contributed to making the life of a manager who must make decision regularly particularly complex and difficult. As a result, organizations are being compelled to incorporate accurate performance measurement, control and improvement systems to enhance their competitiveness. "Planning and measurement are the best places to start an effort to revitalize an organization" ([25], p. 21). Unless strategic planning for effective performance measurement and improvement systems is implemented successfully, management techniques such as total quality management, just-in-time, material requirements planning, business process redesign and reengineering and automation are unlikely to produce the expected results.

The primary purpose of performance measurement in an organization is control. Valid measurements can provide information about the system capabilities, helping identify the levels of performance that can be expected from the processes in an organization and performance deviations from benchmarks. Through performance measurement, feedback can be obtained to answer such questions as "How well did we perform?", "How can we do better?", "What should we focus our attention on?" and "Where should we allocate our resources?". The value of measuring performance correctly in an organization can never be over-emphasized.

Recognizing the importance of the measurement issue, researchers and practitioners have developed a variety of performance measurement approaches. From a methodological point of view, the currently available performance measurement techniques can be broadly classified into three groups: (i) ratios and index numbers, (ii) econometric models and (iii) modern techniques including nonparametric approaches. Well-known methods such as total factor productivity (TFP) models are included in the first group [6, 8] and data envelopment analysis (DEA) in the third

group [1, 2, 24]. For reviews of these techniques, see, for example, [4, 7, 26]. Recently, a procedure called operational competitiveness rating analysis (OCRA) was proposed to gauge the relative performance of the activities of a set of operating entities called *production units* (PUs) [12–21]. Activities of the PUs consume resources to generate value. OCRA is a nonparametric method whose application requires simple, noniterative computations to obtain ratings that gauge the PUs' relative operational performance. The OCRA procedure has been successfully applied to construct performance profiles of branch banks [13], software development teams [16] and subway and hotel operations [14, 15]; to compare the performances of manufacturing industries [20]; and to select processes [19]. OCRA's use as a multiple attribute decision making (MADM) tool is discussed in [18]. The relationship between OCRA and TFP is explained in [15].

The main objective of the present paper is to illustrate the construction of TFD's performance profile using the OCRA procedure and discuss the policy implication for AOB of the effect of the additional staff on TFD's overall performance. In order to put the OCRA performance profiles into perspective and provide a reference for researchers, we include comparisons of OCRA and DEA ratings and profit scores.

The organization of the paper is as follows: in Section 2 we provide a summary of the OCRA model, its computational procedure and the interpretation of the ratings obtained by OCRA. Then, a brief description of the DEA model we compared with OCRA follows. In Section 3 we discuss the measurement of the performance of TFD's operations for the 24-month period between 1993 and 1994, using the OCRA procedure, DEA and profit scores. Finally, we offer concluding remarks on performance measurement using OCRA and policy implications for TFD.

## 2. Performance measurement using OCRA

Operational competitiveness rating (OCRA) analysis is a relative performance measurement approach based on a nonparametric model [12–21]. With OCRA, one can obtain ratings for a set of PUs that gauge the performance of their operations in a relative sense. As we shall discuss later, OCRA has certain important properties making it particularly suitable for investigating the performance of TFD's operations using the available data.

### 2.1. The OCRA procedure

Suppose that we want to gauge the relative operational performance of  $K$  PUs. The concepts of *effi-*

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