



## Performance Measurement for a Bank Branch Network

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In today's retail banking environment, where a more sophisticated consumer with less bank loyalty is becoming the norm, customer service quality is an indispensable competitive strategy. Furthermore, the stiff competition and the compression of the interest rates, forces banks to set up and put into effect all necessary decision support systems that will enable them to dynamically plan new locations, evaluate performance and provide marketing support to their geographically separate units.

Technology has added a new dimension to the competitive pressures that are already reshaping the banking services industry. Recent advances in communication technology, including the development of more powerful computers, are paving the way for new banking products and services, changing the way that traditional banking is done. Evolving technology and the constant changes affecting the banking industry are increasingly pushing toward research into integrated solutions, in order to maintain and enhance customer relationship. It is not only about seeking technically updated solutions: the practical issue is how to intervene in the bank's business processes so as to turn banks into customer centred organisations (Brown, 1999).

In other words banks are facing the increased competition due to two different reasons: (a) the entrance of financial and insurance firms in the traditional banking market, and (b) the wide range of offered products and services to public. As a consequence the banking industries strive to succeed by putting the topic of rapid and changing customers needs to their agenda.

Since branches occupy the key position in the bank's organization, the general policy is to develop flexible structured branches that are tailored to specific customers' needs or target special market segments. Branches are located in geographical areas that differ demographically and socio-economically, each reflecting a different market area. The optimum number of branches, their optimum location and the optimum mix of services each branch should provide are interrelated issues that have to be properly addressed. The need for such decisions emanates from an inevitable reorganization of the branch network, which may include merging bank branches, reconfiguring the image and the types of services offered at the branch level, instigating a thorough and complete branch relocation process, and promoting the differences between products and services offered to different customers.

### Performance Measurement

The continuous improvement of performance seems to be the key for the banks in order to satisfy customers' needs. A great attendance has been given by the literature to bank's network performance and especially in the way that the efficiency is measured.

Many techniques are used in order to measure branch performance, which mainly focuses on management accounting approaches (e.g. Thygerson 1991), utilizing econometric models (Doyle et al. 1979), multiple regression analysis (Boufounou 1995), Data Envelopment Analysis (Avkiran 1999) and artificial neural network-based approaches (Athassopoulos and Curram 1996).

Traditional measures of bank profitability, ROA and ROE, are beset with problems of allocating assets, equity and net income when applied at branch level (Smith and Schweikart 1992). Since most other key financial ratios in bank performance analysis require that at least one of these components be calculated, they also suffer from similar problems. Some of the more common approaches in branch performance analysis have been budgeting (that is, a tool of management accounting) and measuring total deposits. The former is frequently criticized for focusing on items that are outside the control of management, and emphasizing expense items rather than overall profitability. On the other hand, concentrating on branch profit as a measure of performance also has its serious drawbacks in the form of finding equitable ways to allocate revenues and expenses (Davenport and Sherran 1987).

According to Boufounou (1995), one of the most important characteristics of a branch's performance in specific environments (e.g., the Greek Banking Sector for her study) is the volume of deposits. This metric determines, together with other criteria, the branch's order in hierarchy. In addition, the estimated volume of deposits that will be attracted is one of the main decision variables in selecting locations for establishing new branches. Hence, it could be argued that it is important for a bank to have a model that estimates the deposits power of any branch in relation to the features of the area where it is, or may be, located. Estimates are compared to the "average" and not the most effective or best performing branch, as Data Envelopment Analysis allows.

During the 1990s Data Envelopment Analysis (DEA) has been used extensively to evaluate banking institutions. The relation between efficiency and profits was first addressed by Oral (1990, 1992) through two DEA models for analyzing both efficiency and profitability. The profitability model consisted of a desegregation of expenses and income, which were considered as inputs and outputs, respectively. However, the implication of using such models instead of a usual profitability measure was not discussed. Drake and Howcroft (1994) correlated the DEA technical efficiency score with cost-income ratios. Their results indicated that more efficient branches had lower cost-income ratios.

Frei and Harker (1999) present a methodology that determines the role of design in calculating the efficiency of service delivery processes. The efficiency of these processes is determined by using a variation of frontier estimation (data envelopment analysis [DEA]-like) techniques. The proposed methodology replies to the question of how much inefficiency is due to process-design choice and how much is due to process execution. Frei et al (2001) in another research study they examined 11 bank processes, which represent the bulk of activities performed in a typical retail branch, in order to determine the relation between bank's branch-based processes and financial performance. They concluded that improvement in process variation could be more important than improvement in aggregate process performance when dealing with certain customer segments.

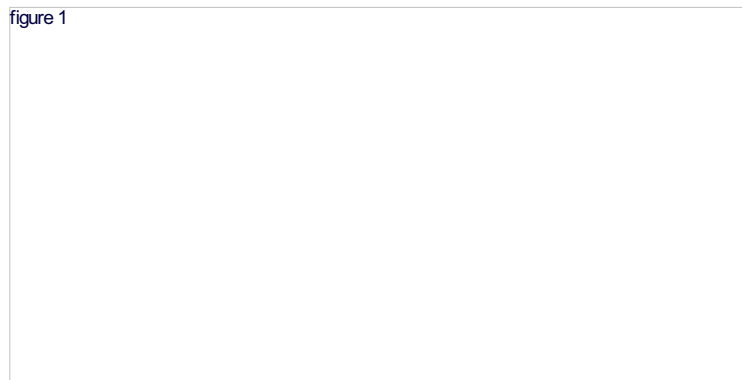
### Performance-Net

The need of Decision Support Systems (DSS) which would enable the management of a retail bank to evaluate and reconfigure its branch network seems to be of great importance. We introduce a DSS, that we call Performance Net, which uses data from a network of POS, such as bank's branches -demographic/financial/ customer's characteristics- in order to evaluate the performance of each branch and of the whole network. Through a mathematical approach and via optimization techniques we are trying to optimize the performance of the bank's branch network determining the number of branches and the mix of services that each branch should offer.

The DSS uses a linear programming model that is based on parameters calculated via multiple regressions over initial community data, to maximize the revenue-generating measures of the branches within the community. The linear program accounts for community performance as a function of performance variables that are explained by a set of external and internal factors. These two types of factors reflect community characteristics and modular branch banking parameters, respectively. The model is solved via an iterative algorithm that targets the optimum number of branches and the optimum mix of services that each branch should offer. The optimization model and solution algorithm determines values for the variables in order to improve branch operations and performance, allowing a comparison between predicted and actual performance levels, and providing considerable information regarding the future of the branches.

The figure below provides an overview of Performance-Net in terms of infrastructure and organization.

figure 1



The model has been tested on sample data from a leading Greek Bank concerning a specific community and its associated branch network. The results indicate that through the proposed approach, the branch network at the community level can be streamlined and transformed into an effective, revenue-generating group of bank nodes. The solution

approach is unique in assisting decision-making during branch closures or downsizing, and evaluating the acquired, through the merger, network and the resulting benefits.

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