

## Using a Business Accounting Matrix for Risk Management of a Tourist Facility

Topic: Social Accounting Matrix and its Applications

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One of the main aspects for the survival and success of a new-born firm, as well as of an already existing one, is the analysis of risks that the latter may encounter throughout its life. Starting from the second half of the 20th century, a series of studies led to the drafting of a succession of Risk Management phases which, today, allows new businesses to avoid catastrophic risks, to control unavoidable risks and to open the doors to new opportunities, through the identification of their own weaknesses and the enhancement of strengths.

However, nowadays, new analysis models that allow Risk Managers to have an even broader vision of the company and consequently greater speed in the management of problems of all kinds are still being sought. In this regard, the application of Input-Output Analysis makes it possible to know, evaluate and manage in the most appropriate way hypothetical scenarios that could occur following a disruptive external event. These changes can alter the balance of an economic system to a greater or lesser extent, due to the multiplier factors that link the different sectors of the firm itself.

Input-Output Analysis has so far been mostly used for the analysis of socio-economic systems, in particular issues from trade policies and macroeconomic shocks. The use of Input-Output (IO) Analysis for single firms is still little used and under development. A useful tool for the application of Input-Output Analysis to a company is the Business Accounting Matrix (BAM), a matrix that shows the main aggregates of the economic and financial activity of the firm and all the significant economic flows among them in a specific period (Manrique-de-Lara-Peñate et al., 2022). The SAM related structure of the BAM allows one to undertake impact analysis related to changes in final demand and prices. We propose to execute this analysis in two steps. The first step calculates the impact on the main elements of the BAM of changes in final demand, that is tourist arrivals in our case. The second one applies the changes in prices to evaluate the potential impact on the Gross Economic Surplus of the firm assuming different scenarios of prices being passed over to the final consumers.

Starting with available historical data on the arrival of tourists and the prices of the main inputs of the firm, forecast simulations are developed using software capable of producing probability distributions and estimating a measure of the uncertainty that an economic parameter has of falling within a defined range. In our case, the economic variable under scrutiny is the Net Operating Surplus (NOS) of the firm. We create a model of possible outputs taking as input uncertain variables (change in visitors and in prices) in the form of probability distributions such as normal, triangular, uniform etc. It then recalculates the results again and again, each time using a different set of random numbers depending on the distribution selected. For each value of the inputs, we calculate the new NOS. The distribution of these values allows us to measure uncertainty, defining the probability of having a positive Net Operating Surplus value ( $\neq 0$ ).

We believe this probabilistic approach offers a wide decision dashboard to the Manager of the firm and allows her to implement the right strategies according to possible future scenarios. We also hope this type of analysis makes Enterprise Input-Output more attractive to firm managers.

Manrique-de-Lara-Peñate, C. A., & Díaz-Mayor, J. J. (2022). The business accounting matrix: a proposal with an application. *Economic Systems Research*, 1-25.