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TOURISM DEMAND MODELING AND FORECASTING WITH ARTIFICIAL NEURAL NETWORK MODELS: THE MOZAMBIQUE CASE STUDY
(ID205)

Hortêncio Constantino
Instituto Superior Politécnico de Gaza
Campus Politécnico, Lionde- Chókwè, Gaza, Moçambique, CP 1
Tel: +25828120401, +258823047056
e-mail: hcvaloi@gmail.com

Paula Odete Fernandes
Instituto Politécnico de Bragança; UNIAG
Campus de Santa Apolónia, Apartado 1134
5301-857 Bragança - Portugal
Tel: +351273303103; Fax: +351273313051
e-mail: pof@ipb.pt

João Paulo Teixeira
Instituto Politécnico de Bragança; UNIAG
Campus de Santa Apolónia, Apartado 1134
5301-857 Bragança - Portugal
Tel: +351273303129; Fax: +351273313051
e-mail: joaopt@ipb.pt

ABSTRACT

This study aimed to model and forecast the tourism demand for Mozambique for the period from January 2004 to December 2013 using Artificial Neural Networks models. The number of overnight stays in Hotels was used as representative of the tourism demand. This variable was used as the output of the model. A set of independent variables was experimented in the input of the model, namely: the Consumer Price Index (CPI), Gross Domestic Product (GDP) and Exchange Rates (ER) of the outbound touristic markets, South Africa (SA), United State of America (USA), Mozambique (MZ), Portugal (PT) and the United Kingdom (UK). A multilayer neural network with different combinations of variables in the input layer, one hidden layer with different number of nodes and one output layer was experimented. Empirical results showed that variables CPI_MT, ER_EURO-MT, ER_DOLAR-MT and ER_ZAR-MT are fundamental, and the GDP_PT and GDP_USA variables are also important to be used in the input of the model because the prediction results became improved. The best results were obtained with the output in the logarithmic domain and using the previous 12 months besides the 6 mentioned variables in the input and 18 nodes in the hidden layer. The best model achieved a mean absolute percentage error (MAPE) of 6.5% and 0,696 for the Pearson correlation coefficient.

KEYWORDS: Modeling; Forecasting; Tourism demand; Artificial Neural Networks; Mozambique