CLASSIFICATION OF CAPITAL EXPENDITURES AND REVENUE EXPENDITURES USING NEURAL NETWORK MODEL

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ABSTRACT

Financial statements are the basic means of transferring a complete picture about any company's performance which is the basement for any business decision making process. Hence, it is very important to ensure their healthy condition and to diagnose and cure any problem they might suffer from. One of the common problems is the over/under stating of the profit/loss and assets figures in the financial statements due to the misclassification between the capital and revenues expenditures. Moreover, it is practically difficult in some cases to draw a line between the two types. This study aims to integrate an Artificial Intelligence technique such as Neural Networks in order to develop a model that can be trained to recognize hidden patterns of the borderline between the two expenditures types. Thus it can successfully help in the classification between the capital and revenue expenditures. Twelve criterions were identified in order to classify between the two expenditures types and a Multi Layer Perceptron (MLP) was incorporated in the constructed neural network model using Neural Connection 2.0. The dataset was collected based on various cases of capital and revenue expenditures. The classification accuracy of the model was 97.51% for training and 94.20% for testing. Analysis has shown a significant correlation between identified criterions (input variables) with model target. Strong correlation between target and criterion LASMFY (0.532), which indicates that any expenditure lasts for more than a fiscal year will be more probable to be classified into a capital expenditure. Same conclusion goes to criterion RESORGN with a strong correlation of (-0.539), which indicates any expenditure that restored an existing asset to its original operating capacity will have more probability to be classified into a capital expenditure as well. Also, criterion RESALE proves its strong influence, since its correlation was (-0.874) this implies more probability of classification into revenue expenditure if any expenditure was spent for intent for resale. Medium correlation shown by criterion REGULR (-0.251) indicates a moderate probability of classification into revenue expenditure if expenditure was spent in a regular basis. Criterions with a weak correlation represent less probability of classification into either of the two expenditures types (capital or revenue expenditure), which implies that each of theses criterions is heavily depending on contribution of the rest of criterions in order to be able to classify. These conclusions were found to be in line with definitions of capital and revenues expenditure drawn by accounting authors such as (Al-Daif, 1981) and (Fess & Warren, 1987).

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CHAPTER ONE

INTRODUCTION

1.1 Introduction

Traditionally financial domain used to employ the latest technologies in order to facilitate its various daily tasks. Recently, financial expertise started to incorporate Artificial Intelligence techniques due to the increasing need to fulfill analysis functions with a considerable complexity in less time, cost and more accuracy. In the last several years, Neural Networks became very popular as an artificial intelligence powerful technique in classification, patterns recognition and prediction tasks (Blass & Crilly, 1992). Artificial neural networks are made of set of processing units called the neurons as they mimic the human brain. The artificial neural network can learn and store knowledge by changing the weights associated with the neurons connections which can be used to solve a given problem via training and experience (Thulasiram *et al.*, 2003).

The classification between the capital expenditures and revenue expenditures is one of the common problems in the accounting literature since it has a significant impact on financial statements. Thompson (2002) pointed out that the misclassification between capital and revenue expenditures has a great impact on the integrity of the financial statements. The consequences if revenue expenditure is treated as a capital expenditure will be:

The contents of the thesis is for internal user only

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