Measuring the efficiency of the branches of Aria Sanat Company by DEA method

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ABSTRACT
Todays, there are many different methods to assess and measure the efficiency and the managers of the organizations use a specific one based on their aims and the type of the organization or design their own method by combining several models. One the newest way for measuring the efficiency is data envelopment analysis which is a useful method to assess the efficiency of the several units with the same structure that not only measures the efficiency of the decision-making unit but also can present efficient result to the managers. This method determines the effective branches and introduces them as good pattern to ineffective ones. The purpose of the present article is descriptive-measurement, the process and methods of data collecting is quantitative and its results are functional. The population of the research included 20 representations of the branches of Aria Sanat Company in Iran during 2012-2013 and the entrance criteria included stuffs, salaries, the amount of the investments and total expenses and outputs included debts and outcomes. Two CCR and BCC data envelopment analysis methods with input nature were used then using GAMIS software the representations were ranked based output criteria from possible inputs.

Keywords: Efficiency, Data Envelopment Analysis, Decision-Making Unit, Input Nature.

1. INTRODUCTION
There is a limitation in facilities of the world so we should act best with is limited facilities. Incorrect and inefficient use of the existed resources is an obstacle for achieving to the organization’s aims. Given that the organization tries to improve its efficiency, measuring it has become an important issue. If this measurement was conducted correct and with a process perspective and continual, it leaded to improve the governmental units and the government accountability and increase the public trust to organizations’ operations and efficiency and effectiveness of the government; It also resulted in improve the resources management, clients satisfaction, helps to national development, making new opportunities and improvement and stability of global class of the companies and institutions in non-governmental sectors. The condition of survival of any organization depends on the efforts and improves its performances (Antonic & Hurich, 2000).

Todays, there are many different methods to assess and measure the efficiency and the managers of the organizations use a specific one based on their aims and the type of the organization or design their own method by combining several model. One the newest method to measure the efficiency is data envelopment analysis (DEA) which is a useful method to assess the efficiency of the several units with the same structure that not only measures the efficiency of the decision-making unit (DMU) but also can present efficient result to the managers. This method determines the effective branches and introduces them as good pattern to ineffective ones. The main purpose of the present research is to assess efficiency of the representations of Aria Sanat Company in Iran by data envelopment analysis method and ranking the company’s branches in Iran.

2. LITERATURE REVIEW
Efficiency There are many different definitions of efficiency presented after increasing the outputs or decreasing the inputs. Generally, efficiency means “the ratio of inputs to data in compare with a specific standard”. In the other words, efficiency is the amount of resource usage for producing a given amount of a product. For the efficiency four types can be defined: Economic Efficiency (EE) means the ratio of amount of the useable product to amount of the production resources used to produce it. Fare believes that economic efficiency consists of two parts: Technical efficiency and Allocative efficiency. Technical Efficiency (TE) It is the reflector of the capabilities of a unit to achieve the maximum output of the utilized inputs. Allocative efficiency (AE) It is the reflector of the capabilities of a unit in use of the optimized amounts of inputs based on the generation coast and technology (Momeni & Sharifabadi, 2013).

The Allocative efficiency finds an exogenous factor means the coast of the inputs depends on the changes of proportional costs (Charnes, Cooper and Rhodes1978). The allocative efficiency is also called the coast efficiency. Structural Efficiency (SE) The structural efficiency is usually used to measure the efficiency of an industry which several agencies work in (Momeni & Sharifabadi, 2013). For measuring the efficiency two methods can be defined: Parametric methods are methods which in a special form consider for production function firstly and then using one of the function measuring methods used in economic and static assessments measure the passive coefficients (parameters) of the function. Since this method assesses the parameter(s) of the function it called parametric method. Non-Parametric Methods Given that the method of this research is non parametric (data envelopment analysis), hence this method will be describe in details in the next sections of this session.

Data Envelopment Analysis Researchers have presented many different definition of data envelopment analysis which some of them are presented here: the data envelopment analysis is a classic on-parametric method and based on the mathematical programming which use to compare and measure the efficiency of a series of the same decision making units. The data envelopment analysis is a mathematical programing technique which calculate the proportional efficiency of numerous decision making units based on observed inputs and outputs that may explain by different measuring factors. The data envelopment analysis is a solid instrument which use in measuring the efficiency of the organizations such as business companies, hospitals, governmental agencies, educational institutions and etc. that present an individual criteria of efficiency for each unit in compare with its peers (Momeni & Sharifabadi, 2013). The data envelopment analysis is a mathematical programing method to measure the decision making units which use several inputs for making output. It is no need to allocate the weights to inputs and outputs in data envelopment analysis method because it determines the weights by itself. This method introduces some units as pattern for inefficient decision making units. For data envelopment analysis defined two basic features:

1) The nature of the used pattern
Input nature: in case in the assessment process, with maintaining the outputs level, try to minimize the inputs, the nature of the used pattern is input-based. Output nature: in case in the assessment process, with maintaining the outputs level, try to maximize the outputs levels, the nature of the used pattern is output-based.

2) The ratio of efficiency to the scale of the used pattern
The ratio of efficiency to scale: Explains the relations of the changes in the inputs and outputs of a system. 1. Efficiency to a fixed scale: The ratio of efficiency to a fixed scale means that any multiple of inputs produce the same multiple of the outputs. 2. Efficiency to variable scale: the ratio of efficiency to a variable scale means that any multiple of inputs produce the same, more or less multiple of outputs. Moreover for DEA some types of the main model can be defined:

Multiplier model of CCR (Charnes, Cooper and Rhodes) input-based. As mentioned above, the data envelopment analysis methods classified in two input-based and output-based methods. This model was suggested by Cooper and Rhodes for the first time in 1978 and its name was inspired of the first word of its developer and is so-called by CCR.