

## **MEDIA-SPEND ANALYSIS USING MACHINE LEARNING**

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Companies need to create an advertisement plan by using Machine Learning (ML) Prediction model which can forecast future ratings with reducing current human decisions in order to have high expressions to a brand or service while human can't imagine about future. Successful model can improve marketing strategy, decrease procurement costs and improve efficiency. The emergence of big data concepts with machine learning techniques introduced resurgence in media-spend analysis strategies. To adapt to this big change, the marketers search for new methods to analyse the media-spend (Media Spends Analysis on advertising) data to better understand how marketing investments affect their companies' sales and revenue in future. The main aim of the research is to build a predictive model for Media Spend Analysis. Predictive model will predict the future ratings of Television Rating Point (TVR) of an advertisement from previous data. ML changes common marketing analyses into more efficient and accurate analyse in the modern world. This paper provides a methodology for companies to develop appropriate advertising plans for media spend by building a predictive model using a big dataset (about 1 million records), which is based on the Sri Lankan Television Channels advertisements, and machine learning strategies. This methodology was implemented using a dataset for training and testing. The predictive model is developed using Long Short-Term Memory (LSTM) specific recurrent neural network (RNN) architecture, which takes advantage of the three multiplicative units in the memory block to determine the optimal TVR dynamically. A memory block in the recurrent hidden layer is used to model with storing the temporal state of the network. Autoregressive Integrated Moving Average (ARIMA) model is used to compare the LSTM method. In the final stage, we propose a dashboard which visualizes the ratings which is forecasted by model to make better marketing decisions. The results show that the proposed prediction model using LSTM provides higher accuracy (74.60%). This study will help to focus on future ratings of sales of Company products/services by predicted TVR using passed data.

**Key words:** media spend analysis, big data, TVR, LSTM, ARIMA