Modelling for Hospital Rating Improvements on Peer Review sites considering Region-specific Factors

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Abstract

Hospitals are increasingly shifting their online review strategy from active listening to proactive engagement by ensuring proper response to patients. The patient perspective is increasingly recognized as the central pillar of quality in healthcare industry. Working condition in public hospitals has been of great concern worldwide for healthcare personnel. Also, due to poor review of a hospital, financial performance is gradually deteriorating which leads to migration of healthcare personnel. Reviews of and responses from hospitals vary in different regions of the world, thereby process of ranking of hospitals is bounded to a specific region. Quality assurance and improvement are crucial factors for an efficient healthcare system. This study investigates the joint effect of management response and online reviews on financial performance of hospitals by concentrating on three areas of concern. First, how variations in management response both within a hospital and on peer review site affects the motivation of healthcare personnel and attracts more patients. Second, a cyclic link depicting the interrelationship among four major domains: rating, management response, financial performance and recommendation have been shown. Third, a generic model is proposed and an analysis has been done to introduce the concept of region specific factor. A k-score value of around 93% is obtained for the final model. Also, a case study on Indian hospitals is performed to depict the sufficiency of the model.

Keywords
Hospital Ratings, Decision Analytics, Regression and Modelling, Region-specific factor and Descent Algorithms.

Biographies

Mr. Mayukh Saha is a sophomore in the Department of Industrial and Systems Engineering enrolled in its Dual-Degree course (B.Tech and M.Tech) at Indian Institute of Technology, Kharagpur. He has been associated with several projects like forecasting product life cycle curve of personal computers, IPL auction price and match prediction and surveillance system in house to survive adverse conditions. He is a holder of internships from TATA Steel Limited, Alive Home Technologies Pvt. Ltd., Metabot Technologies and Kaizing. He also upholds major position in the Institute by being Department Representative at Career Development Centre, Student body member

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Dr. Jitendra Kumar Jha is an Associate Professor in the Department of Industrial & Systems Engineering at Indian Institute of Technology (IIT) Kharagpur. He obtained his PhD from IIT Kanpur where he worked in the area of Supply Chain Management. He graduated in Production Engineering from BIT Sindri and completed his M.Tech in Industrial Management from IIT (BHU) Varanasi. He has received several scholarships and awards from DRPG IIT Kanpur, BITSAA of North America, SJ Jindal Trust New Delhi, etc. His main areas of teaching and research include Operations Research, Statistical Decision Modeling, Facility Planning, Supply Chain Management and Inventory Control. He published/presented forty papers in international journals and conferences, and his publications appeared in Applied Mathematical Modelling, Computers & Industrial Engineering, International Journal of Production Research, Journal of Manufacturing Systems and other leading journals of Industrial Engineering. He has been associated with five projects from various sponsoring agencies. He organized short-term courses on Facility Planning, Service Science and Data Analytics. The current profile of Prof Jha can be found at IIT Kharagpur website.

Dr. J Maiti, PhD, Professor, Department of Industrial & Systems Engineering, Indian Institute of Technology (IIT), Kharagpur, India has more than fifteen years of teaching, research and consulting experience on statistical modeling of production and service systems in the areas of Quality Management, Safety Management, Work System Design, Asset Management and Healthcare Management. A recipient of Career Award for Young Teachers from AICTE, and Young Scientist Project from DST, he has published more than 70 papers in international and national journals of repute and more than 30 papers in conference proceedings. He has been executing a number of Industry-sponsored consulting and Government-funded research projects. He has organized more than 15 training programmes and short-term courses for industry participants. Prof Maiti has been pursuing research on the applications of multivariate statistical modeling since 1995. He excels in teaching basic statistics, multivariate analysis of variance (MANOVA), multiple and multivariate regression, principal component analysis (PCA), factor analysis, path modeling, structural equation modeling (SEM), cluster analysis, correspondence analysis, discriminant analysis, and logistic regression. A 42 lecture series on *"Applied Multivariate Statistical Modeling"* of Prof Maiti is available through youtube uploaded by NPTEL (national programme on technology enhanced learning). The current profile of Prof Maiti can be found at IIT Kharagpur website.