Independent Study Title	Optimizing 3G Service Sites in Rural Area: A Case Study in Context to Bhutan
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ABSTRACT

In developed countries, 3G services are common and usually provided by several private operators with almost 100% coverage. However, the situation is quite different in most developing countries. Majority of the people are considered to be under poverty. In most of these countries, telecommunication services are provided by state enterprise which cannot only make profit but have to support people as well. Therefore, compromise must be made in order to serve people within acceptable profit. In this thesis the problem of 3G service site installations in rural area has been modeled on the average income per active user, ratio of active users per potential user and the relationship between each component to solve the problem of installation of 3G sites in profitable areas whereby the input is done on the selected clusters of profitable customers. A framework is proposed in this thesis to solve the 3G service site optimization.

The proposed model considers both population coverage and expected income, which can be easily utilized by state telecommunication enterprise of any developing countries. In this paper, the optimization of 3G service sites in rural town is first modeled by famous linear programming and later the results are further explained by using the genetic algorithm which proves to be a good solution in providing a very small overlap area among sites. With flexible adjustment of parameters, the proposed technique provides tradeoff value to investment.

Keywords: Optimization/3G Service Sites/Rural/Flexible/Technique/Investment/ Genetic Algorithm/ Flexible Adjustment/Linear Programming/Tradeoff