Optimization of query in distributed database system is one of the dominant subjects in the field of database theory. Depending upon the placement of data a query can be described as centralized or distributed query. The processing of distributed query is entirely different from the centralized query as in the former case the data is distributed over number of sites. Decision Support System Query (DSSQ) is one of the decisive types of distributed query. DSS queries are complex and time consuming in nature. Due to the decentralization of data and the complexity of query, it becomes mandatory to optimize the DSS query in distributed database system. In this work an effort is made to find an optimal DSS sub query allocation plan in distributed environment stochastically using Genetic Algorithm. The queries are designed on the basis of one of the benchmark of DSS query as given by TPC-DS. The DSS queries are
optimized on the basis of Total Cost. The use of Genetic Algorithm has significantly expedited the process of DSS query optimization. The effect of varying communication cost over Total Cost of system resources is also observed.

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**Index Terms**

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**Keywords**

DSS Query; Distributed Database; Genetic Algorithm  Sub-query Allocation Plan.