

Performance enhancement of IntraBank VSAT communication links a case of selected Bank in Tanzania.

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The VSAT technology has evolved as a cost effective solution for linking various sites of a growing company, for this case of selected bank in Tanzania. Such access networks are typically characterized by high attenuation, delay and channel variability when frequency of 10GHz or above is used. Hence, to make these networks a reliable access technology, it is necessary to design a link that suppress attenuation, counter delay effects, combat rain fade and channel variability effect and thereby improve the links' throughput. In this dissertation multicarrier time division multiple access (MC-TDMA) system model has been developed after analysis of the signals at the transceivers. The sources of errors such as delay, multiple access interference, were quantified and included in the analysis of the model to get the best representation of the physical system. The aim was to provide maximal achievable throughput when MC-TDMA is coupled with channel coding. The simulation results showed that proposed MC-TDMA coded system has an average throughput of 78% with 2-3 seconds delay compared with the existing single carrier ALOHA or uncoded system with throughput efficiency of 65% with 4-5 seconds delay. There is 13% more increase in throughput efficiency than existing or uncoded system. The 13% increase in throughput efficiency was obtained by expense of increasing number of system iteration up to 5th times. The developed system will reduce the problem of unreliable communication link in banking sector and therefore boost financial profits.