

**Research (4)**

**The Spatial Analysis of the Influence and Efficiency of the  
Mobile Phone Base Stations in the City of Banha**

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### **Abstract**

The present study aims at analyzing the spatial influence of the three networks of the mobile phone base stations in the city of Banha, the factors affecting them, suggesting the optimal locations for deploying them through the use of GIS techniques, monitoring their actual sphere of influence, determining how far they are efficient and safe and determining the level of satisfaction towards them as sensed by the sample under investigation.

The results of the study show:

- The number of base stations in the city of Banha totaled 45 in 2015, with the greater share to Vodafone Egypt, followed by Mobinil.
- The base stations of Mobinil and Vodafone cover all the quarters of Banha, except the Prince quarter for the former and KafrMenaqir for the latter.
- The spacing and the regularity of distribution of the base stations pertaining to the three companies show similarities in spatial pattern, the distribution tends to the NE direction of the city.
- The metal-towers base stations of the three companies are the most efficient and the most secure in Banha.
- The radius of the actual sphere of influence of the base stations of Etisalat company is 453.8 m, a figure that reflects the efficiency in delivering the service, as it covers wider area compared to the coverage of Mobinil and Vodafone stations.
- The three quarters lying East of the Rayyah (*i. e.* Manshiyyat al-Nur; the Prince; Al-Haras al-Watani) comprise the highest percentages of dissatisfaction in the sample under investigation.

The study recommends the construction of a metal tower serving the stations of the three companies in the Cemeteries area East of the Rayyah, so as to serve Ezbet el-Metini that suffers from the lack of the service. Recommended also is the need for a firmer control by the National Telecommunications Regulatory Authority (NTRA) to check for the safety standards as applied in the three companies.