Chapter 17
Critical Success Factors to Establish 5G Network in Smart Cities:
Inputs for Security and Privacy

Sheshadri Chatterjee
IIT Delhi, India

Arpan Kumar Kar
IIT Delhi, India

MP Gupta
IIT Delhi, India

ABSTRACT

In order to increase and develop overall performance of Modern Network Grids in Smart Cities of India with acceptable levels of security and privacy, the internal and external factors which substantially affect the performance of network grids in Smart Cities without jeopardizing privacy and security issues are needed to be identified. Besides, the interdependencies of these critical success factors are needed to be realized clearly. This paper seeks to identify these critical factors and also takes a sincere attempt to ascertain the main driving forces among these critical success factors and to ascertain inter-relationship among the CSFs. These factors here have been identified by the help of three reliable instruments which are questionnaire based survey, brainstorming and finally consolidation by Principal Component Analysis (PCA). A total of 16 critical success factors eventually have been detected by the help of PCA and finally a pragmatic structure of inter-relationship among the CSFs been developed by the application of Interpretive Structural Model (ISM).

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INTRODUCTION

Appreciable and continuous development of Information and Communication Technologies (ICT) have brought in thorough change in urban settings. Cities are taking new shape with modern facilities. Now in cities different web-based digital activities with the help of modern network system are available. Cities which can provide all type of modern facilities including modern network system are called, broadly speaking, Smart Cities. All the services in cities, especially in Smart Cities, have been digitalized. This needs strong network system. India is also not exception though in India complete creation of Smart Cities is in infancy stage (Lövehagen & Bondesson, 2013). Central and State Governments of India are trying their level best to immediately create at least 100 Smart Cities in India. It is expected that infra-structures of Smart Cities to be created in India would bring drastic change with modern inter-connected systems for monitoring, for control and even for automation. These all require robust and modern network system and as such for fetching success relating to creation of Smart Cities in India the factors which are critical to improve the network grid systems are to be identified with modern tools. This paper has taken a sincere effort to identify those critical success factors to improve network system within the level of security and privacy issues. However, if for improving network systems we ignore the security and privacy issues we cannot expect to achieve desired results (Brown & Brudney, 2003). Naturally the success factors for better network system are to be detected keeping in mind that those success factors are critical and are within acceptable level of security and privacy issues (Nfuka and Rusu, 2010). Here for identification of the success factors responsible for modern network grid systems several processes like questionnaire base survey, brainstorming and at last Principal Component Analysis (PCA) have been taken and effective, meaningful critical success factors for achieving best network facilities have been detected. While detecting so, it has been kept in mind that these factors effectively controlled the security and privacy issues in acceptable range. It is also very important how the success factors so identified are inter-related and which are the main success factors acting as driving forces. For this, Interpretive Structural Modeling (ISM) technology has been utilized. In this method the different success factors so detected through different means (Questionnaire Based Survey, Brainstorming, Principal Component Analysis) are set into a Systematic Model (Warfiedd, 1974) where a well-defined designed pattern is formed carefully with implication of graphics as well as words (Ravi et al, 2005; Singh et al., 2003; Raj et al., 2011). This technique funds its applications in many places like process designing, carrier planning, barrier identification, e-commerce issues etc. (Banwet et al., 1999; Rajesh et al., 2007). This paper tries to find out what are the critical factors to establish 5G grid network for the Smart Cities of India focusing mainly on security and privacy challenges

LITERATURE REVIEW

In the proposed Smart Cities in India the concerned authorities are continuously trying to bring overall development by use of digital activities through developed smart grid networks and to plug up all type of unwanted pilferage, security and privacy are being tightly preserved (Bartol et al., 2011). Social networking system is standing on digitalization and people of Smart Cities are expected to depend on this modern technique and lest this activity of the citizens of Smart Cities do not face any unexpected impediment due to threat concerning to security and privacy issue, appropriate steps are being taken by the authorities to keep this threat mitigated to a great extent (Biswajit Tripathy et al., 2011). The citizens