# A Review on Grabbing COMPETITIVE ADVANTAGE THROUGH SMART CITIES using ICT

**\*D Swapna[1]**
Assistant Professor /*CSE Department,*
*PVP Siddhartha Institute of Technology,*
*Kanuru, Vijayawada, India*

**A Madhuri[2]**
Assistant Professor */ CSE Department,*
*PVP Siddhartha Institute of Technology,*
*Kanuru, Vijayawada, India.*

**S Phani Praveen[3]**
Assistant Professor/*CSE Department,*
*PVP Siddhartha Institute of Technology,*
*Kanuru, Vijayawada, India.*

**K Venkatesh[4]**
Assistant Professor/*CSE Department,*
*PVP Siddhartha Institute of Technology,*
*Kanuru, Vijayawada, India.*

## Abstract

*In this globalization world Smart cities are the need of the hour. The economic well being and productivity of the country is mainly measured on the ability to create employment opportunities while grabbing the competitive advantage through globalized environment. The vision of the government of India is to enhance the living compatibility of people by transforming urban cities to smart cities with usage of technology. Implementation of technology in each and every sphere to improvise the facilities and services in wide areas as such of governance, infrastructure, transportation and for optimal utilization of available resources. The goal of smart city is to make best usage of information and communication technologies to provide efficient and good service to citizens. Witnessed a rapid growth in Indian urban population from 27.8 % in 2001 to 31.16% in 2011 and is expected to rise to 66% by 2050. This paper mainly focuses on the challenges faced in development of smart cities. The way to solve these problems is by usage of technologies.*

***Keywords:*** *smart city , ICT , governance , health care..*

## 1. INTRODUCTION:

Increase in population and less employability in villages made people to migrate to urban areas from rural areas. But it has huge impact on available resources. To manage problems of rapid urbanization the concept of smart cities came into picture. Wikipedia [1] definition of smart city is "A smart city is an urban development vision to integrate multiple information and communication technology(ICT)".Information and Communication technology place a major role in smart city management[2].This allows officials to directly interact with citizens and monitor how city is evolving.Through sensors data are collected from citizens and devices they are processed and analyzed.Information and analyzation are the keys to tackle the problems.

The full form of SMART IS

- S - Specific
- M - Measurable
- A - Achievable
- R- Realistic
- T- Time Bound

**Figure1:** the major technology adoption and Digestion Cycles Since the 1950s
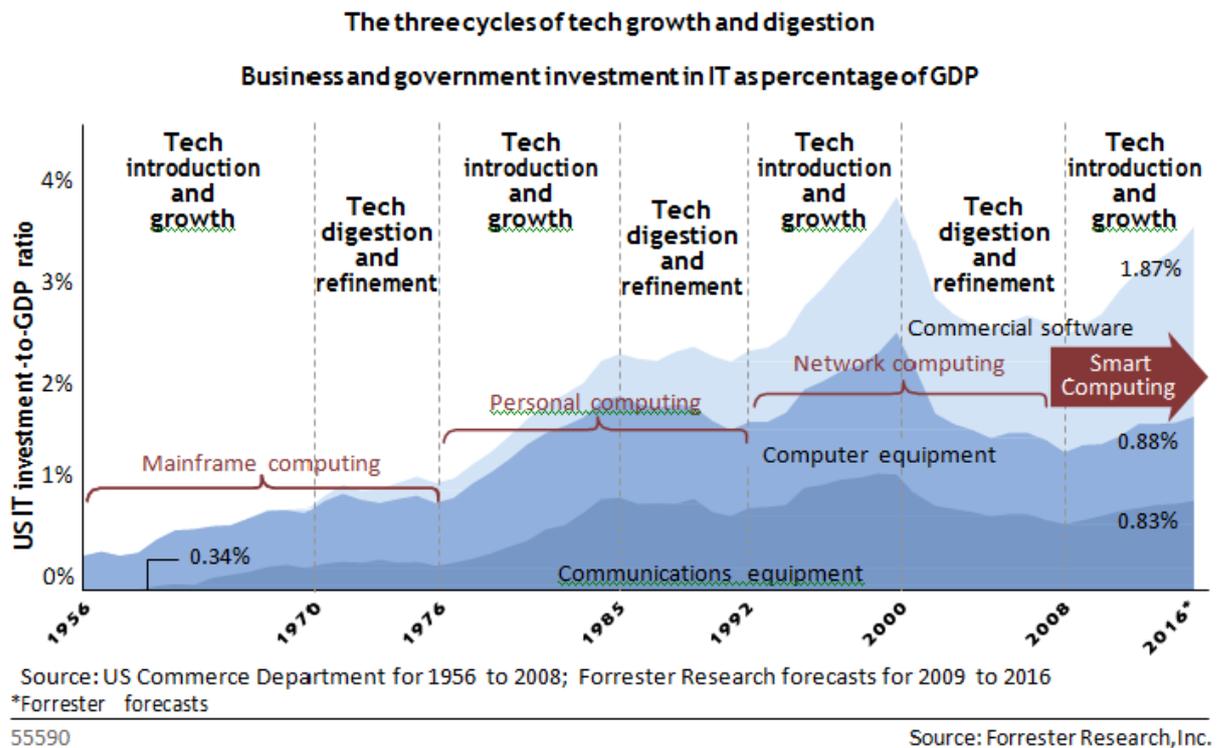


Making citizens aware  of digitalization by providing internet will the process of building a smart city faster.For a smart city the involvement of citizens is much important.Thier feedbacks and suggestions related to various issues will help to identify various problems.Citizens suggestions regarding technology,networking,transportation and water resources will help to plan a smart city in a better way.The problems identified through these surveys should be considered and solved based on gographical,political and economical conditions.

The vision of Smart Cities is to provide more inclusive, secure, efficient,and effective services to citizens, thus ensuring the livability andsustainability of the wider city community. Smart City solutions integrateinformation and operations within and between city systems anddomains and engage with citizens, businesses, and the broadercommunity in new ways. In this context, engaging with city planners,private developers, corporate building owners, and property managersthat have a portfolio of facilities becomes an essential aspect ofsustainable economic development

**Why Smart cities?** Nations economic and social development is prevalent on development of cities.Cities are the places where many companies provide their business and provide variety of services.The exponential increase in urban populations will lead to demand for new housing,which leads to challenges in managing the existing infrastructure and resources.For example, ten years ago there were2.9 billion urban residents worldwide who generated about 0.64 kg ofmunicipal solid waste (MSW) per person per day (0.68 billion tons peryear). Today, these amounts have increased to about 3 billion residentsgenerating 1.2 kg per person per day (1.3 billion tons per year).Pollution, clean water and air, traffic, parking, and transportation problems will be experienced bycity stakeholders.

If planned, implemented, and managed well, Smart Cities are capable of addressing many, if not all, of the problems facingcitizens within growing urban environments.

**Figure2**: rapid Urbanization Is Causing Cities to Outgrow rural areas
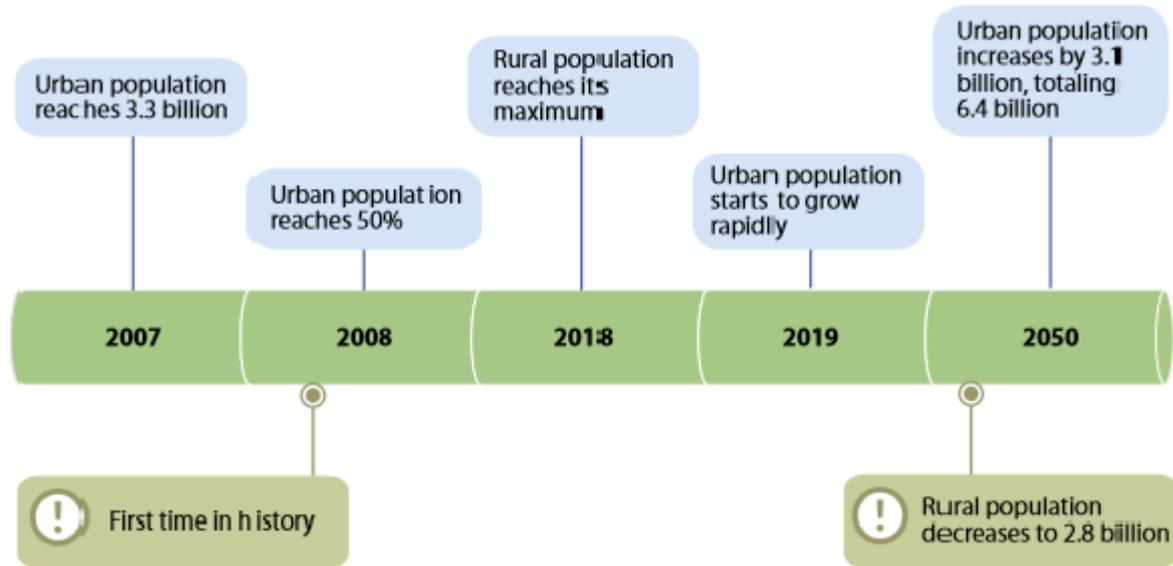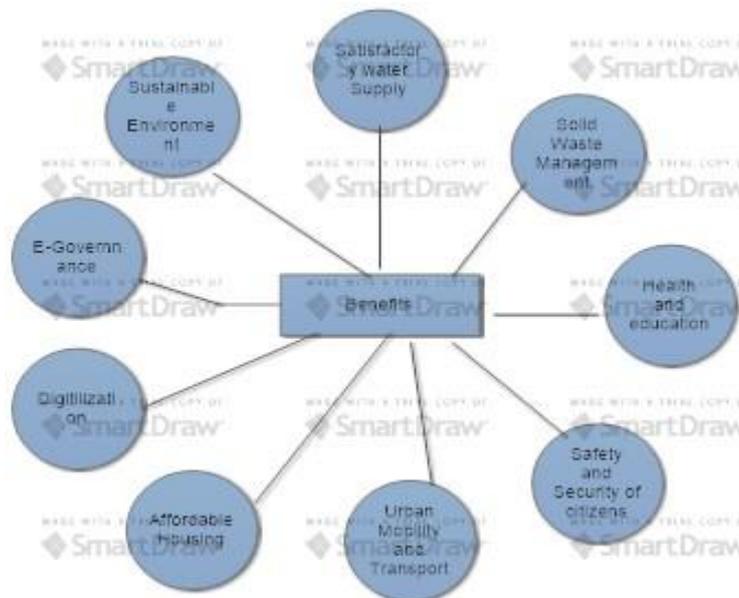


## Challenges in smart cities



**Figure3:**

The main challenges in developing smart cities is to provide

- Sustainable Environment
- Satisfactory Water Supply
- E-Governance
- Digitilization and Robust IT Connectivity

- Affordable housing
- Urban Mobility and Transport
- Safety and Security of Citizens
- Health and Education
- Solid waste Management

Great advances in the fields of computers, information technology and communication technology has lead to the conceptof smart cities where virtual infrastructure is as important as the physical infrastructure in managing and governing the city for providing high quality and sustainable living environment to its citizens. As of know, cities like Barcelona of Spain, Amsterdam of Netherlands, Milton Keynes of United Kingdom and Singapore are making efforts in implementation of smart city concepts.

This paper discusses on how face the challenges in development of a smart city.

## Satisfactory Water Supply

Water management is an important issue in urban development. This problem can be handled by proper distribution of water to domestic, commercial users and farmers. Waster water treatment plans must be developed. Softwares are needed to detect water leakage. By stopping wastage of water satisfactory water supply can be provided

## E-Governance

Making citizen-friendly and cost-effective governance –increase in dependence of online services for transparency and accountability in governance, specially using smartphones to deliver cost effective services and to provide services without going into public offices. Creating e-groups to convey messages to people and get opinion,use of online observing of plans and actions with the help of cybertools on worksites.

## Robust IT Connectivity

The connectivity must be strong so that citizens get benefitted of it. For example if public transport system offers real time tracking of services which gives an alert when the transport arrives near bylocation.Such IT services should be provided to citizens

## Affordable Housing

Encouraging mixed land use in area based expansions –preparation for areas containing a variety of well suited activities and uses of land nearby each other to use it efficiently facilitates affordable housing

## Urban Mobility and Transport

A smart city should be equipped with roads for vehicles as well as pedestrians.There should be a provision of separate road for bicycle riders.City should be well connected with bus,rail and air.Transportation facilities within the city should be timely and frequent.Dedicated public transport is needed.If people use their own vehicles pollution will be increased.

## Safety and Security of citizens

every mobile could assist security surveillance, panic buttons, emergency / disaster assistance and patching authorized mobile phones to the command and control centre will make it immensely powerful.

**Figure4**:



## Health and education

Health and education are two important concepts that help us in  buiding a prosperous nation.They lay foundation for economic growth in country.An integrated approach is needed for good education and good health of people.

## Waste Management

It can be done by segregarting disposable and non-disposable waste.Efforts must be taken to transform disposable waste to organic fertilizers.Maintaing sensors for trash bins.Because trash speed varies from location.This would enable municipal staff to make smart data driven decisions.

## Conclusion

In this paper, we reviewed real time challenges we encounter while making smart cities,which includes governance, infrastructure, transportation, health care, water and electricity distribution among others. The challenges in these areas are of discussed. It is prominent that advent of new technology plays a major role in transforming and upgrading the feasibilities for citizens in a smart way. These challenges require a systematic approach of solving which involves collaboration and co-ordination of different departments under government.

Further, we also need to consider social issues which we may confront as non-technical challenges. For smart cities to gain its glory and advantages people need to posses certain level of skill set towards understanding and usage of technology. And thus it is of important to educate people on basics in technology while focusing on the pedagogy of education. Even though we have initiatives and existing systems for smart cities, the infrastructure to implement a fully ubiquitous city will be costly.

While smart city is an emerging and welcoming concept it might appear that is more a slogan than a reality. The commitment of smart city is long with technical challenges and with improvement and commitment in mindset of citizens it is possible to achieve with reasonable success.

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