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Factors affecting Green Building Based Smart City

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Abstract— Due to continuing migration of people from rural area to urban area and urbanized area there is many problems faced by the urban area. So there is difficulty to provide good living condition to each and every citizen. Overcome of that condition we construct smart city, intelligent city as the solution of urbanization as well as construct green building for the good living condition of human health. in this paper we tried to found the different factors that affect the construction of green building based smart city. So we can avoid the different factors and ignite the construction of green building based smart city for the next millennium.

Keyword—factors, Smart Cities, Green Building

I. INTRODUCTION

For construction of green building based smart city there are many factor which affect the construction activity. For smooth construction work we have find out the different factor which affect the green building based smart city.

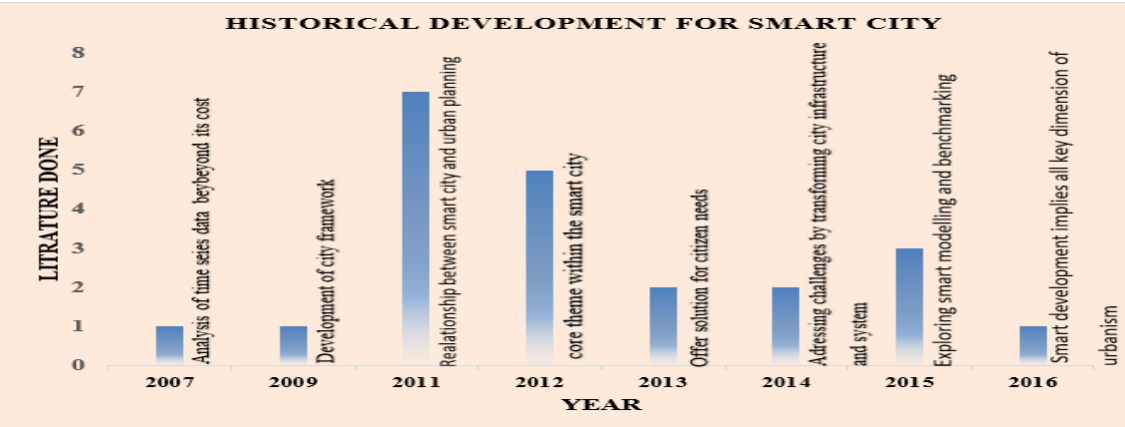
For find out the different factor which affect the green building based smart city we have review the different literature review, books, reference paper, journals based on smart city and green building respectively. Literature review is the best study material for the find out the different factors. In this paper reviewed the 24 numbers of literature review for the smart city and 44 numbers of literature review for the green building. For that prepare the historical development year wise and number of literature done in particular year as well as major finding for that particular year. For better understanding, divide the different factors in different groups.

II. HISTORICAL DEVELOPMENT

Historical development is prepared in the form of graph based on the literature review for the smart city and green building. Historical development indicates the number of literature done in a particular year as well as indicates the major finding from the particular year's review paper.

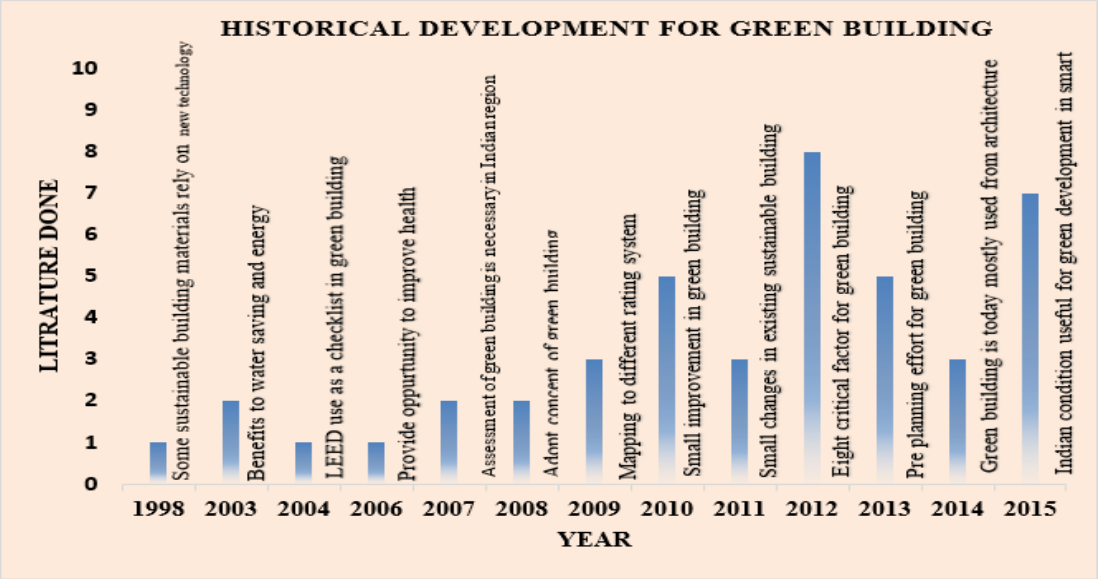
1. SMART CITY

Below we show the historical development for the smart city based on the literature review



2. GREEN BUILDING

Below we show the historical development for the smart city based on the literature review



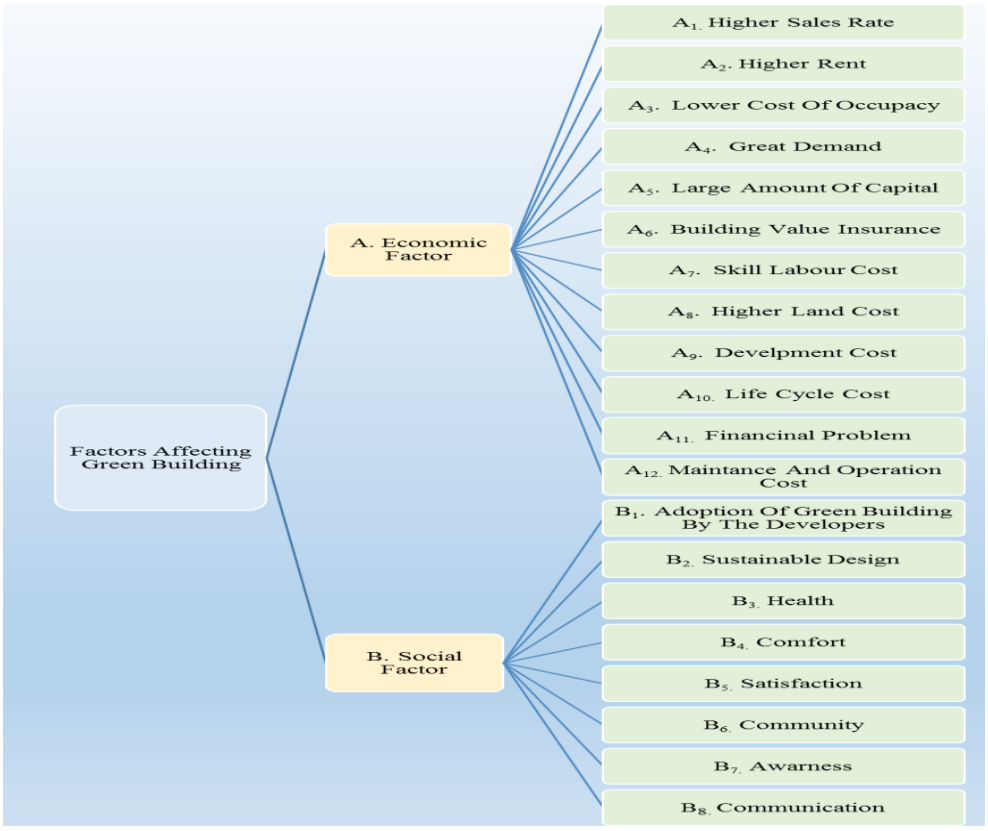
III. MAJOR FINDING FROM THE LITRATURE REVIEW

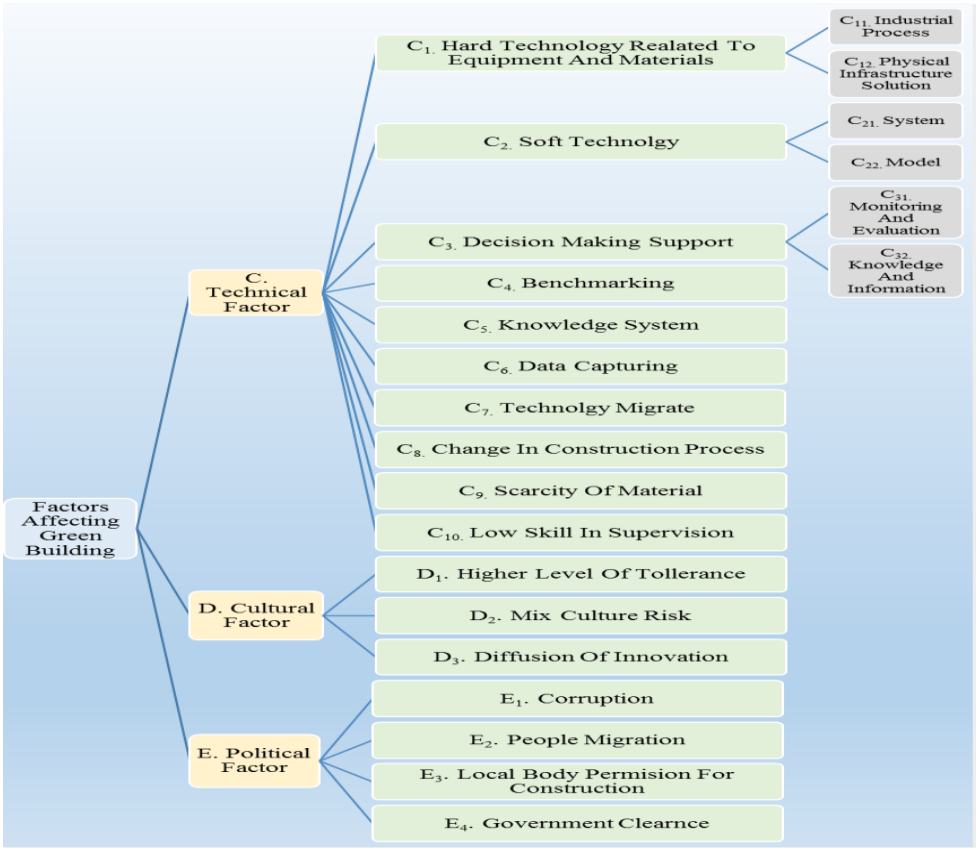
1. GREEN BUILDING

We have identified about 38 factors and classified them in 5 different groups as follows:

1. From the analysis, divided the factor that affected the green building are economic factor, social factor, cultural factor, technical factor. **[25,49,62]**
2. From economical factor, minor eleven factors were identified from the previous work as: lifecycle cost, benefits to land, material, labours, environmental cost, loss of bio diversity, higher rent, higher sales, great demand, large capital investment, lowers cost occupancy, building value insurance. **[13,57]**
3. For technical factor, eight factors were identified from the previous work as: hard technology related to material and equipment in which influenced by industrial process and physical infrastructure solution, soft technology which influenced by system and model, decision making support which influenced by monitoring and evaluation, knowledge and information, benchmarking, knowledge system, data capturing, technology migrate, change construction process. **[22,51]**
4. For cultural factor, three factors were identified from the previous work as: mix culture risk, higher level of tolerance, diffusion of innovation. **[28,64]**
5. For political factor, four factors were identified from the previous work as: corruption, government clearance, local body permission, people migration. **[34]**

After identifying these factors, an integrated framework for assessing the factors affecting green building was developed, which contained main 5 groups containing different 38 factors.

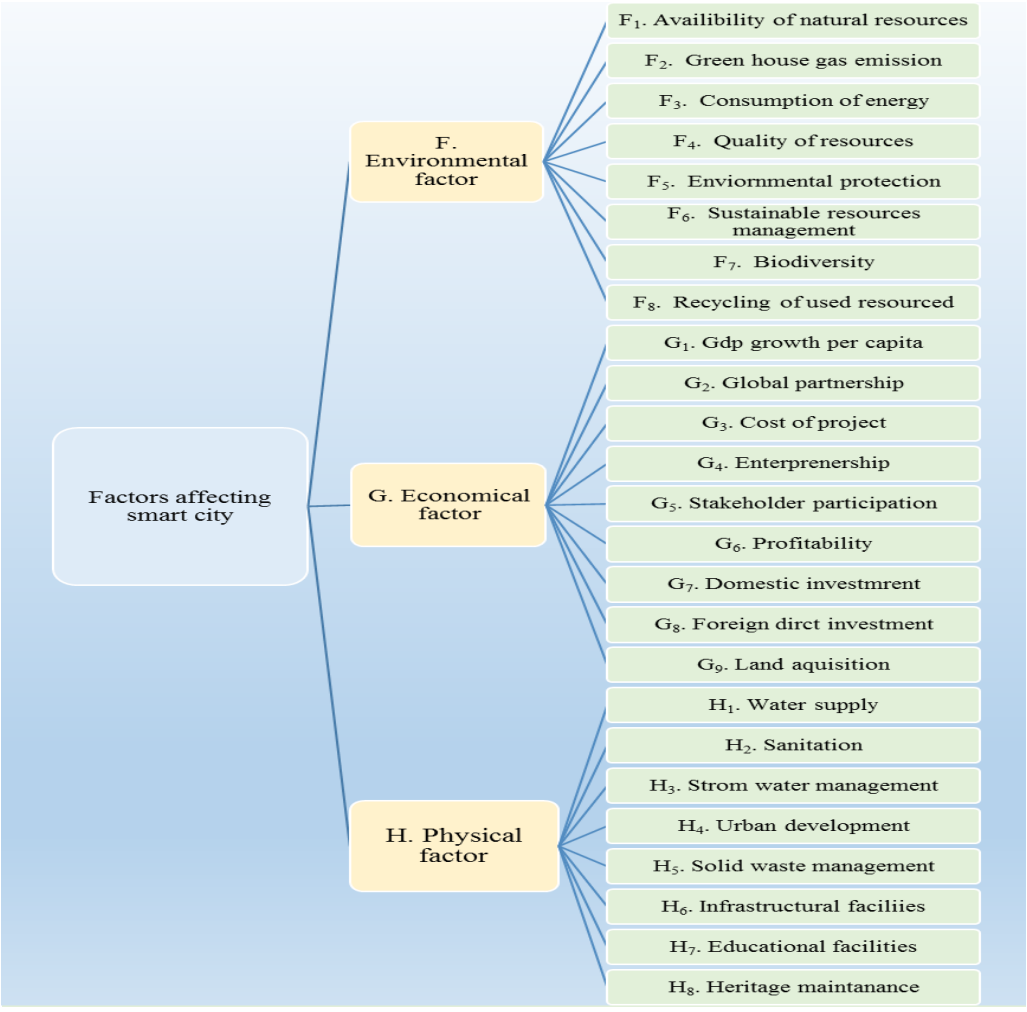


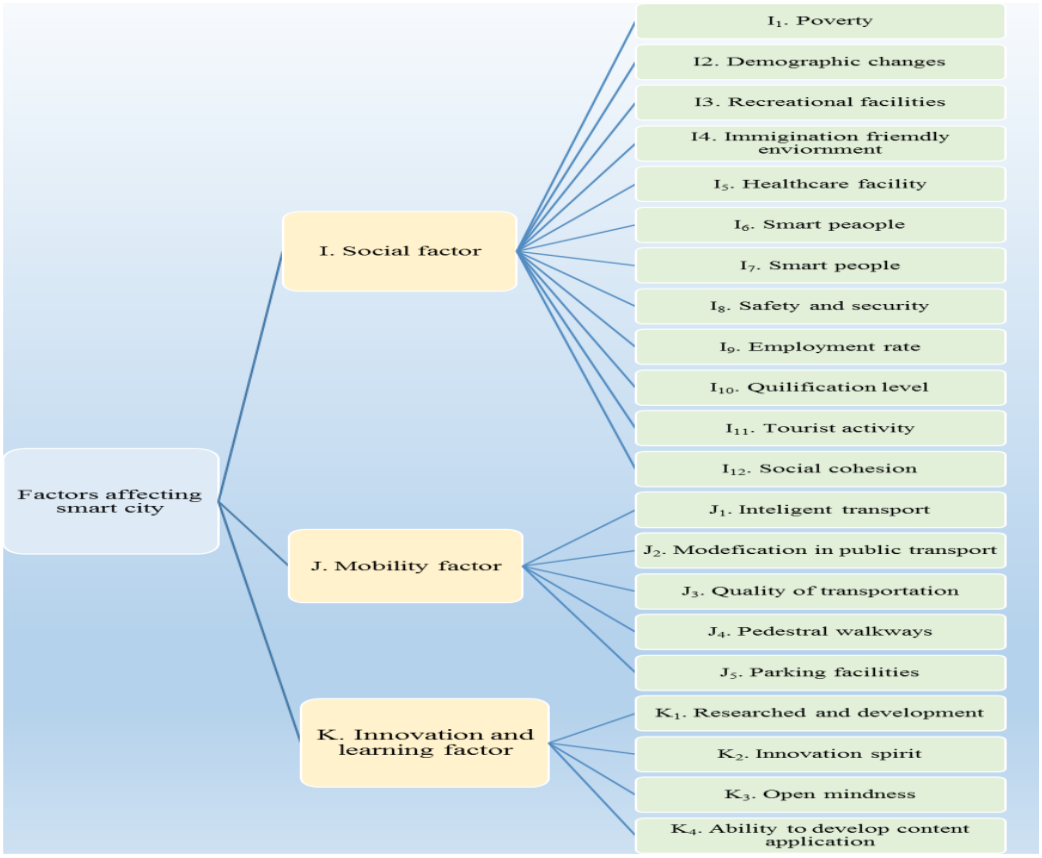


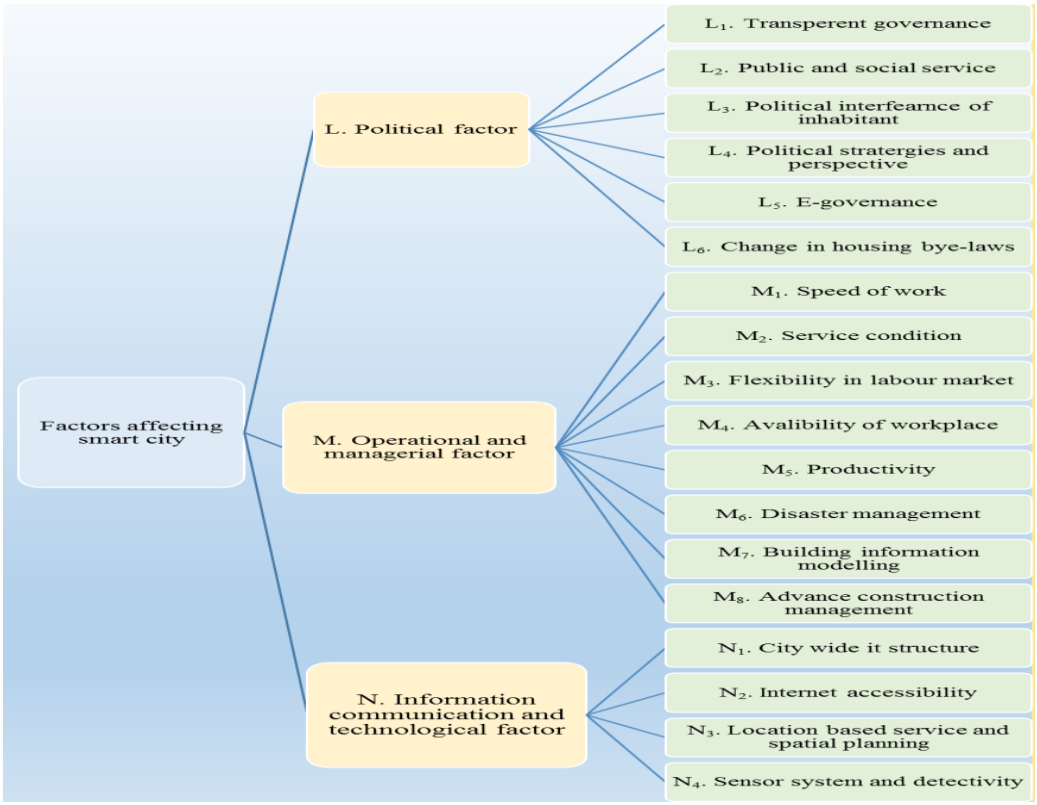
2. SMART CITY

We have identified 66 factors and classified into 9 different groups for smart city as follows:

1. For Environmental, eight factors were identified from the previous work as: Availability of Natural resources, Greenhouse gas emission, Consumption of energy from renewable sources, Quality of resources, Environmental protection, Sustainable resource management, Biodiversity, Recycling of used resources. **[58,40]**
2. For Economic, nine factors were identified from the previous work as: GDP growth per capita, Global partnership, Cost of the project, Entrepreneurship, Stakeholder participation, Profitability, Domestic investment, Foreign direct investment (FDI), Land acquisition. **[43]**
3. For Physical, ten factors were identified from the previous work as: Water supply, Sanitation, Storm water management, Urban development, Solid waste management, Power Supply, Educational facilities, Heritage maintenance, Infrastructural facilities, Affordable housing. **[8,11]**
4. For Social, eleven factors were identified from the previous work as: Poverty, Healthcare facilities, Demographic changes, Recreational and cultural facilities, Smart People, Safety and Security, Employment Rate, Qualification Level, Tourist attractively, Social Cohesion, Immigration friendly environment. **[12]**
5. For Mobility, six factors were identified from the previous work as: Intelligent transport system, Modification in public transport system, Quality of public transport system, Public transport vehicle management and passenger info, Parking facilities, Pedestrian walkways & Cycle paths. **[20,23]**
6. For Innovation and learning, four factors were identified from the previous work as: Research and development, Innovative spirit, Open mindedness, Ability to develop content and application. **[5,46]**
7. For Political, six factors were identified from the previous work as: Transparent governance, Public and social service, Political interference of inhabitants, Political strategies and perspective, E-governance, Change in housing bylaws and codes. **[4,19]**







IV. CONCLUSUION

Based on Literature Review the following conclusions are drawn:

1. From the literature review we found the number of factor which we can be further utilize in to analysis work as well as it will be further utilize in to design work.
2. Due to factor finding we minimize the cost of construction.
3. With the help of factors, we can minimize the impact on environment
4. Factor can be further divided in to numbers of groups which helps to the engineer, architect and consultant to understand the site conditions.
5. Factors can be considering in to planning, scheduling so affecting of factors impact can be minimize as well as reduce the effect on human health.

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