Advantages and Disadvantages of using IoT for Smart Cities

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I. Introduction

Due to the rapid growth of urbanization, cities are facing numerous challenges, e.g. traffic congestions and safety issues [1]. The Internet of Things (IoT) has emerged as a promising solution to overcome these challenges along with data analytics and artificial intelligence [1].

The Internet of Things (IoT) refers to the interconnection between physical and virtual objects through the internet, enabling them to collect and exchange data [2]. The identification of these devices in the internet is done through the use of unique identifiers, such as IP addresses [2]. Talking about IoT devices, they can be anything from smart home appliances to sensors and actuators used to collect data and execute actions.

[3] emphasises the importance of meeting the rising urbanization with the development of smart cities. Smart cities are urban areas that leverage internet and communication technologies (ICT), such as IoT to enhance the quality of life, improve the economy, and promote sustainability [3].

Dummy citations: [4]

II. Research Methodology

This study adopts a Systematic Literature Review (SLR) approach to examine the advantages and disadvantages of using Internet of Things (IoT) technologies in smart cities. The reason for this approach is to provide a comprehensive unbiased overview of the current state of research on this topic.

To identify relevant papers, a structured search string was developed to capture a broad range of perspectives on the topic. The following search query was used in academic databases:

> TI (iot OR "internet of things") AND (smart cities OR "smart city") AND (advantages OR benefits OR pros OR strengths OR disadvantages OR cons OR risks OR challenges OR drawbacks OR weaknesses)

The search was limited to peer-reviewed journal articles and conference papers published in English. As a database for the search, Google Scholar and EBSCO were used.

III. Advantages of IoT in Smart Cities

A. Traffic Management

The integration of IoT in traffic management systems has shown significant improvements in urban mobility. IoT-enabled traffic lights can adapt in real-time to traffic conditions, reducing congestion, improving travel times, reducing emissions and fuel consumption [1]. For instance, smart traffic lights can adjust their timing based on real-time data from observed car movements through cameras and sensors [1].

[5] highlights that smart traffic management systems have even more benefits, such as notifying citizens about traffic conditions, other transportation options and routes, which can help them make informed decisions about their travel plans.

B. Energy Management

C. Healthcare

D. Community

E. Waste Management

F. E-Learning

G. Smart Homes

H. Safety and Security

IV. Disadvantages of IoT in Smart Cities

V. Conclusion

VI. References

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