

the society.

LITERATURE REVIEW

Every year, the urbanization of various countries, especially Indonesia, must be undergoing surge and development (Wahyudi et al., 2022). But according to (Pratiwi et al., 2015) In the big cities there's always been and even increased over time. Progressive technological developments make all sectors, including urban, more efficient and efficient..

In an urban context, the presence of Information, Communications, Technology or ICT in short makes the activity better because it takes advantage of technological developments. That the basis of the change or industrial revolution on the development of digital information technology belongs to the transport sector. This can give a positive impact in many areas because it has begun to implement the concept of smart mobility such as communication related complaints to the public service without having to go to the location of service and public transportation like in Solo there is Batik Solo Trans, in Jogja there is Trans Jogja, even already there is online transportation namely Gojek, Grab, Maxim and so on that there are innovations such innovations are not independent of the development of technology that exists today (Safitry et al., 2020). According to (Ilmananda et al., 2022) Arguing that building smart cities should ensure the availability of connectivity throughout the city territory. While (Patabuga et al., 2019) In his writing that the city community, has already had an awareness of the importance of implementing the concept of smart city.

Smart City

There is a smart city concept that exists today because of many urban issues (Cahyadani & Djunaedi, 2022). Talking about urban governance, according to (Faidati & Khozin, 2018) In his journal, smart cities in Yogyakarta Special District (DIY) have a different concept of development from the development of smart city concepts. The smart city of Yogyakarta is under the smart culture of smart education and smart tourism. However, in Indonesia, the implementation of smart city development often finds various barriers that start from the lack of proper infrastructure and people are not able to make the most of digital technology (Rizaldi & Nugroho, 2020). The concept of smart cities not only deals with the application of information and communication technology, but also how to effectively deal with serious urban problems for a better life (Amijaya, 2020). Other views according to research by (Kertati, 2020) Therefore, we need to be careful in developing ecosystems with information technology that can turn them into collective goods so that the concept of smartcity ecosystem can come true. There are some important indicators for realizing smart cities.

According to Smart City Cohen's theory in research by (Ardhana, 2024) These indicators are economics, mobilization, smart environment, smart societies and smart quality of life. In his writing (Farania

et al., 2017) mentioned that in the tourism sector, the City of Solo will implement the concept of smart tourism in tandem with the government that has partnered with several companies such as Indosat, PT. StarOne Telecommunications Partners to collaborate to run and encourage digital governance, digital taxation, intelligent tourism, labour management and smart street lightning. According to (Nurlukman & Basit, 2021) Smart cities have a TripleHelix model that dominates the process of cultural reconstruction backed by policy, academic leadership, and corporate strategy.

Smart Living

In the city of Solo itself, it is said that there is a lot of building facilities and infrastructure for the community. Other research by (Amijaya, 2020) shows that in the context of smart cities, the concept of smart mobility and smart living is no less important than other smart city indicators. Next, research by (Darmawan, 2018) bearing in mind that the quality of life of a people must also be seen from the health and safety of its environment. There are three parts that must be fulfilled and important to support intelligent living: educational facilities that are able to utilize the presence of technology, the existence of sarpras related to the tourism potential of the region well, and the development of infrastructure so that the public can access services and all the facilities available (Izzuddin, 2022).

The smart living governance system in the smart city concept must be able to use human resources and develop network infrastructure such as the Internet (Insani, 2017). Further according to (Nday & Djunaedi, 2021) In his writing that in the district of Kulon progo, the development of smart living is more to the construction of infrastructure and services to facilitate society. These developments have brought many changes to management and can benefit the public through developments in the region. Smart living in smart city aims to boost the productivity of Solo City (Rahmatullah, 2021). On the other hand, the role of government must also be wise, according to (Hasibuan & Sulaiman, 2019) In order to be able to realize a smart city, then the Governor's institutions first set the vision, the development target program to show the Smart City for a better life.

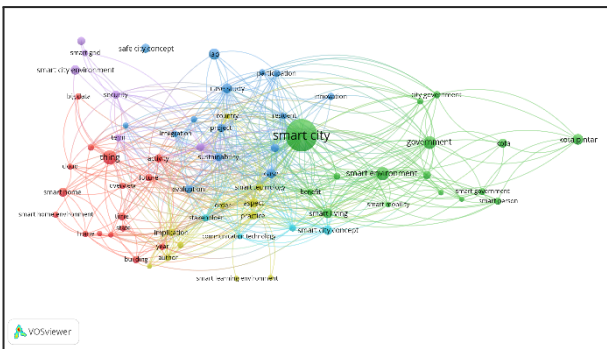
Smart Environemnt

Smart Environment is an important part or indicator of smart cities (D. N. Sari, 2020). Being a sustainable city must meet some indicators, one of which is a smart environment. The implementation of smart cities in Solo City with this smart environment indicator can provide benefits to the sustainable environment and is expected to also strengthen the status of Solo City as an innovative and environmentally friendly city (Zulfa & Nurhayati, 2019). Research by (Ardinata et al., 2022) mentions that humans have the creativity of innovation, where not only to the world of manufacturing industry, but also contributing aid such as the integration of

physical and virtual space.

If the smart environment is not supported by the development of information networks, protection and good governance of the living environment between the government, the public and the private sector, then smart environments cannot be implemented. Next, research by (Ardhana, 2024) mentioned that sustainable urban development has a targeted focus on three key factors, namely economic, social and environmental development. Not only that, but it is also necessary to develop the organization's resources including finance, inventory, creativity and efficient information technology according to needs (Koy & Rodrigues, 2019). In fact, it is not only smart living and the environment to support the smart city in the city of Solo but also the need for cooperation and communication between the government agencies of the City of Solo are connected to each other so that they can communicate and cooperate well (Luthfia & Alkhajar, 2020).

Picture 1. VOSviewers Network Visualization



Source: Created by author with VOSviewers

In Figure 1 above is a VOSviewers processing software that shows network analysis, network visualization using VOSviewer that shows the relationship of one cluster with another cluster based on previous research where there are keyword associations of the chosen literature discussing smart city (green network) and interrelated or related to other networking (network berwarna biru, merah dan kuning). This research is accompanied by literature studies and previous studies relevant to smart city topics and themes. Previous study data was taken using the Publish or Perish software of ±350 articles/journals from google scholar with the time range 2010 to 2024 and processed using VOSviewer software whose purpose is to manage the view which makes it easier for authors to know the discussion of previous studies with current research with the bibliometric map system. The keywords that the writer uses to process data visualization networking are smart city, smart environment, smart living, environment, living, smart towns, smart cities, technology, and smart city concepts. Related discussion of the review literature whose purpose is to classify the differences between research and the gap between previously conducted research.

RESEARCH METHOD

In this study, the method used is qualitative descriptive. Researchers use qualitative descriptive research methods with secondary data sources obtained from websites, news portals and mass media from 2018-2024 to be collected, read, investigated and supported with other secondary Data sources such as articles, journals, literature or previous studies with relevant themes or topics about Smart City which then analyze data with the process using VOSviewers and Nvivo software.

Table 1. Secondary data from news

No	Media News	Total
1	Detik	10
2	Kompas	10
3	Tribunnews	10
4	Merdeka	10
5	Solopos	10

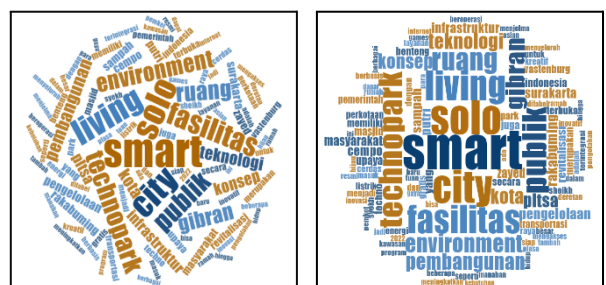
Source: Created by author

Using this qualitative method, the researchers attempted to decipher, discern, analyze and associate with Cohen's Smart City theory where their discussion focused on the parameters of the Smart Living and Smart Environment indicators as well as researchers could provide conclusions from the results of the research that can be used as answers to questions related to how urban governance and implementation of the concept of smart living and smart environment as supporting indicators to realize Solo Smart City.

RESULT AND DISCUSSION

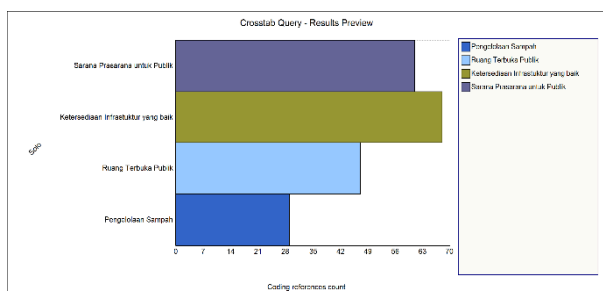
One of the cities in Indonesia, precisely in Solo itself, can be said to be one of the smart cities amongst other cities of Indonesia that are growing rapidly due to the numerous development projects that exist in that city. The city of Solo is also known as the city of art and culture. Besides, Solo City often hosts certain events. This is due to the willingness of the City of Solo in terms of infrastructure, urban management and of course adopting the concept of smart cities. The concept of smart cities can make urban governance better. This proves that there are several priority development points in the City of Solo that can support the concept of smart living and smart environment due to the presence of such development projects.

Picture 2. Word Frequency Visualization



Source: Created by author with Nvivo 12

Figure 2 above shows the result of a frequency word visualization from the secondary data of 50 newspapers taken from the online mass media. The above image is processed using Nvivo software by searching for about 200 words that often appear in mass media online. Well known words that often appear in the word frequency are smart, city, solo, environment, living, technopark, public, construction, facilities. The above picture also shows that the majority of mass media speaking and discussing related how the concept of smart city in Solo City by applying the indicators Smart Living and Smart Environment which became the main topic of discussion in this study.



Picture 3. Crosstab Query Diagram Visualization
Source: Created by author with Nvivo 12

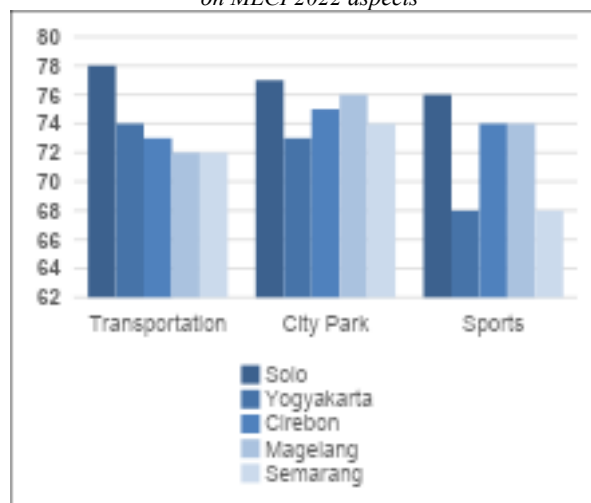
In Figure 3 above is a diagram of visualization of results with some references or sources from news portals processed with Nvivo software. The author uses four parameters of two Smart City indicators namely Smart Living and Smart Environment to provide an explanation and further insight on how urban governance, facilities, infrastructure availability, open green/public spaces, waste management in Solo City to realize the concept of smart city.

Public Facilities Provided

According to figure 3 of the visualization diagram above, the parameters of means and facilities for the public in the City of Solo are quite dominant in the reference range of 56-63. This proves that there are many references or sources that discuss the means of prasarana. There are many facilities in the City of Solo that are often discussed in the mass media one of them is public transportation and the presence of Bus Rapid Transit known as Batik Solo Trans which is beneficial to all the communities in Solo City because the presences of Batik solo Trans can answer the problems of congestion and reduce the use of private vehicles. Besides, it also has a fairly cheap price. Of course, with adequate and useful public facilities and facilities, it can be said that Solo City has already implemented the smart city concept.

Since moving to the leadership of Mayor Gibran Rakabuming, his programmes are more to improve the facilities and facilities for the public such as revitalizing the zoo of the Tarujurug Zoo into a Safari Solo Zoo that is now better than ever and revitalize the Balekambang Park that is built more modern.

Picture 4. Facilities Comparison Index of Top 5 Cities Based on MLCI 2022 aspects



Source: Indonesia Most Livable City Indeks (MLCI) 2022, data created by author

Figure 4 shows an index score of the facilities of the Top 5 inhabitable cities according to MLCI 2022. Based on the MLCI aspect of 2022, the City of Solo tends to dominate the three aspects of facilities. It is shown that the availability of the facilities available in the City of Solo where the average score is 70 up. On the transportation facility, the City of Solo provides a Fast Transit Bus called Batik Trans Solo where the availability of public transportation is very helpful in addition to its cheap price but also reduces the use of private vehicles to minimize congestion. For the city park aspect, Solo City has several priority programmes for revitalizing city parks.

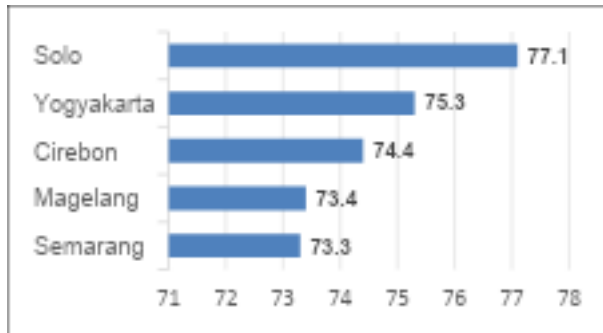
For facilities and sports facilities, Solo City is better than four other cities. It's proven that Solo City has been a frequent host and quite good at hosting national and international sporting events, from the 2022 ASEAN Games to the 2023 U17 World Cup. In fact, FIFA has shown live Manahan Stadium, in the City of Solo to host the prestigious football final. The success of the City of Solo has made it the city with the highest score of sports facilities among the four other cities that sail with the availability of infrastructure as well as the construction of good sport facilities in Solo.

Infrastructure Availability

On these parameters, the Solo City Government has set priority points for infrastructure projects in order to realize the concept of smart cities. According to the Surakarta website, go.id, there are 17 priority building points in the City of Solo such as Sheikh Zayed Mosque, Technopark, revitalization, spatial arrangement and so on. In order to create habitability of a city, infrastructure is needed to create a smart city (Insani, 2017). The Solo City Government continues to develop infrastructure to be by the entire community and to realize the concept of Smart Living and Smart

Environment. To strengthen the analysis, there is supporting data of comparisons between other cities in Indonesia that also implement the smart city concept. It can be seen in the following picture

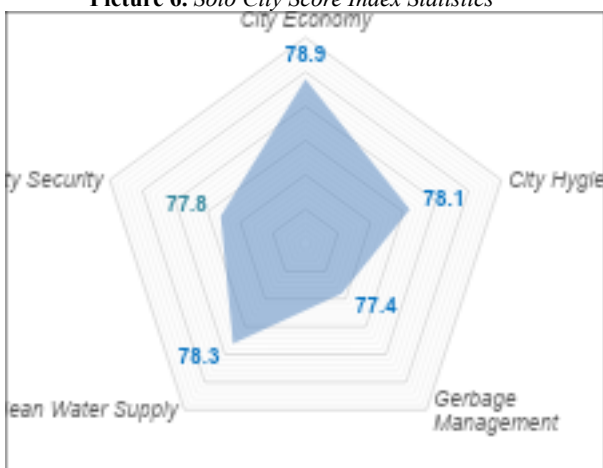
Picture 5. Top Tier 5 Cities in Indonesia with Index of Dignity Based on MLCI 2022



Source: Most Livable City Indeks (MLCI) 2022, data created by author

In the figure 5 above, according to the publication of data from MLCI in 2022, Solo City ranks in the top tier score of the indigenous city index in Indonesia with the first place beating Yogyakarta City which became its closest competitor followed by Cirebon City ranked third, Magelang Town ranked fourth and Semarang City last ranked fifth. The City of Solo provides a variety of infrastructure development such as shelter manahan, Solo Technopark, Sheikh Zayed Great Mosque and other priority programmes. Therefore, the availability of infrastructure is crucial to the implementation of the smart city concept in Indonesia. Further to find out more deeply why Solo City is a livable city, here is another supporting data of Solo City statistics consisting of several aspects according to the following picture :

Picture 6. Solo City Score Index Statistics



Source: Most Livable City Indeks (MLCI) 2022, data created by author

Figure 6 above shows City Solo's index score statistics according to MLCI aspects of 2022. To realize Smart Living and Smart Environment, there are aspects

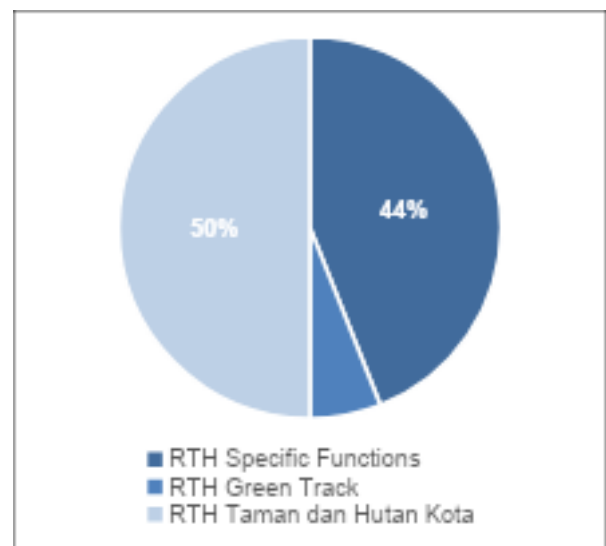
that need to be taken into account. The City of Solo is often the host of national and international events and many events such as music concerts, art and cultural performances have made the city of Solo more advanced. City of Solo's hygiene is also quite good with a score of 76.1. Refer to (Amijaya, 2020) mention that in the context of smart cities, the concept of smart mobility, smart environment and smart living is no less important than other smart city indicators.

Besides, the provision of clean water in Solo City also ranks quite well with a score of 78.3. The government with the City of Solo's Environmental Services is doing a good job of protecting the city's environment. With these factors and statistics, it can be said that Solo City is a decent city to live because Solo City gets ranked 1st Highest City according to MLCI in 2022 according to Figure 5 because Solo Town builds infrastructure availability based on the application of smart city concept well.

Green Open Space

According to picture 3 that in the City of Solo, this public open green space is also a lot of talk especially in the mass media. RTH has been regulated in the Law No. 26 of 2007 on space arrangement. In the context of the application of the Smart Environment, it is explained in the law in article 29, paragraph (2) that the proportion of open green spaces in the urban area is at least 30% of the area of the city and paragraph (3) the share of public open green space in the city area at least 20% of the size of the town area. By 2022, most of the public open spaces have met the established standards, but public open space is still estimated to be 12.45% of the area of Solo City (Zulfa & Nurhayati, 2019).

Picture 7. Solo City Green Open Space (RTH) Composition Visualization Diagram



Source: Solo City Environment Quality Index (IKLH) 2022, data created by author

Figure 7 above shows that the City of Solo's green open space (RTH) is half the category of city parks and forests whose coverage is divided or

contributed to the city park and recreational park. Categories of open green spaces specific functions are divided into river boundary areas, burial areas and rail boundaries. The presence of urban forests, parks and river boundaries is becoming essential for optimizing the ecological function of vegetation in the City of Solo. This Solo town doesn't have much of a RTH because it's transferring functions to open land into awake land.

Surakarta City Environment Service regularly cares for the Park and Space. However, overall, the public open green space in Solo City is still in the further development phase to create the Smart Environment to create a good smart city governance that benefits the entire Solo City community.

Gerbage Management

Creating a Smart Environment, one of its parameters is a good garbage disposal system. On the picture 6 scores for garbage management in Solo City quite well with a score of 77.4. Addressing the problem of garbage in urban areas in particular City Solo can be done in an integral or comprehensive way and must implement principles and implement several aspects such as the legal aspects, the financing, the institutional, the role aspects as well as the society, and the technical aspects of operations. The community also has a role to play in the management of garbage, playing an important role as it has a huge impact on the entire program of the waste management.

The Solo City Government has a final disposal site (TPA) to collect the garbage into a single unified site located in Mojosongo. To create sustainable cities, the ESDM Ministry has given policy to the national PLTSa project to be built in 12 cities in Indonesia including Solo City as a solution to the garbage problem in Indonesia. The PLTSa is expected to be able to provide a "control and co-creation" perspective to reduce waste, power supply as well as a change in waste culture in TPA (Mansyur, 2022).

There is a final disposal site or TPA Princess Cempo in the City of Solo has an area of about 17 hectares and began operating in 1987 and can accommodate about 100,000 tons of garbage. In Solo City, there is a project to revitalize the final disposal site (TPA) to be built into a waste power plant. (PLTSa). In October 2023, the Princess Cempo PLTSa was officially operational. Surakarta City's waste management infrastructure has been officially recognised by the ESDM Ministry. By building this PLTSa as an effort by the City of Solo government to make a positive contribution to the sustainability of the environment and the energy independence of Surakarta City. The presence of PLTSa is a form of performance of the City of Solo Government in handling the problem of garbag (Zulfa & Nurhayati, 2019).

CONCLUSION AND RECOMMENDATION

Solo City is one of many cities in Indonesia that implement the concept of Smart City. Solo City can be said to be one level better in implementing the concept of Smart City than other cities. This proves in the Best

Cities Index of 2022 that Solo City has achieved the highest index score compared to other cities and makes Solo City a livable city in Indonesia. The Solo City Government continues to encourage infrastructure development to support Smart Living and Smart Environment. Smart Living and Smart Environment are mostly interrelated because they both require synergy and infrastructure development. There are priority development points such as the provision of public open green spaces, revitalization of parks, gardens, zoos, the existence of a useful Solo technopark and the layout of space/area up to the presence of a waste power plant is a government effort to create a smart, sustainable and modern Solo City. The facilities in Solo City are also complete and have a fairly good index score compared to other cities. Therefore, with the implementation of smart living and smart environment, Solo City is a city worth living..

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