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# Examining the smart city in order to provide practical solutions Case study: Rome, Vatican City


## Abstract

The growth of urbanization in tourism destinations and developing cities in recent decades can bring innovative methods in various areas of urbanization and tourism and thus improve the urban living environment. A smart city is one of the most important topics in the area of smartening of urban spaces in smart urban structures and tourism. The generation of smart cities can be addressed in this regard. They got to pay thought to the think about of human needs and it alters over time based on analysis of human and environmental characteristics making it necessary to address the components of technology to make the lives of future generations productive. The method of the present study is based on previous studies and the qualitative and quantitative methods for the development of futuristic cities from the perspective of smartening. The main aim of this study is to examine the weaknesses of the case study and provide a solution for optimization (European city of Rome - Vatican) based on the creation of an improved tourism area based on environmental quality and environmental smartening in terms of smart tourism services. The results of studies suggest that based on the sustainability criteria of developed cities, urban infrastructure can be upgraded to an attractive and sustainable environment by smartening and using artificial intelligence, and the city of Rome can be turned into a city museum for tourism in terms of urban structure with the aim of smart walking tourism.


**Keywords:** *Smart City, Urban Sustainability, Sustainable tourism, Artificial intelligence, Human needs*


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## Introduction

In the contemporary world, cities need development for the future, and through new technologies, aims such as: Sustainability can increase the quality of environment and life, environment, climate change and meet changing human needs. Thus, cities are on the verge of increasing population, so it is vital to pay consideration to urban offices and the desires of city inhabitants, so the need to pay attention to the environment and improve life in urban communities can lead to the structure of futuristic cities to sustainability. (Fokaifes and et al, 2018, pp. 1-8) In general, future lands that have been upgraded using intelligent intelligence can meet human needs using technology. (Grassl & Groß, 2019, p. 27) A scient metric analysis (Ingwersen & Serrano-López, 2018, pp. 1205–1236) Related to the development of future cities using artificial intelligence and futuristic elements. In fact, holistic stability can cover futurist regions. (Adunadepo & Sunday, 2018, p. 10) For instance, the quality and development of the surrounding environment can be presented using intelligence and artificial intelligence. Although developing cities can use artificial intelligence to prevent population growth and environmental degradation as well as climate change. Therefore, with the use of robots and up-to-date technology, optimal urban services as well as meeting human needs in cities can be called an intelligent age. (Boenig-Liptsin, 2018, pp. 16-21) The vision of future cities can be presented using the process of technology and the utilization of counterfeit intelligence. Therefore, the goals of this research is the following:

- Define the overall framework and technology of the smart city and its services
- Application of smart technology in futuristic cities
- Investigating the change of in human needs using Maslow's theory
- Provide solutions tailored to changing human needs as technology advances

Research Assumptions

- It seems that with the use of artificial intelligence in intelligent environments we can answer to the productivity and performance of cities.
- It is assumed that by examining the theory of human needs, we can give an optimal answer to the changes in human needs in smart cities.

Sustainability and human needs, as reviewed by the literature, concentrating on human's full capacity over the process. Balancing the environmental vitality in urban areas will have positive impacts on the urban development based on sustainability, and meet the needs and demands. However, without reducing production resources (Ben-Eli, 2018, pp. 1337–1343), the human and environmental context seems to experience growth (Ehrenfeld, 2021).

So, implementing a framework requires sufficient knowledge about artificial intelligence, the model of human needs, the perspective of forward-looking communities, and urban infrastructure. Finally, using the qualitative method in the first stage of research, we can point out the limitations and theoretical foundations, by looking at examples such as Examples of smart and historic cities one can understand the creation of a sustainable future for humanity.

Then, with the method of quantitative research, the level of satisfaction of the citizens of one of the specific cities can be measured by using a questionnaire and its numerical analysis with computational software (Spss), and achieved optimal and practical results in this area how to present Smart lands and use by artificial intelligence, and finally measured the change in human needs in the future.

**Research literature**

**Human needs**

The relationship between designing smart cities and changing human needs in the future should be examined and its functional components identified. The famous psychologist Abraham Maslow put his human needs hierarchy in 1943 (Maslow., 2021, pp. 358-379). Human needs are shown at five levels. (Figure 1)

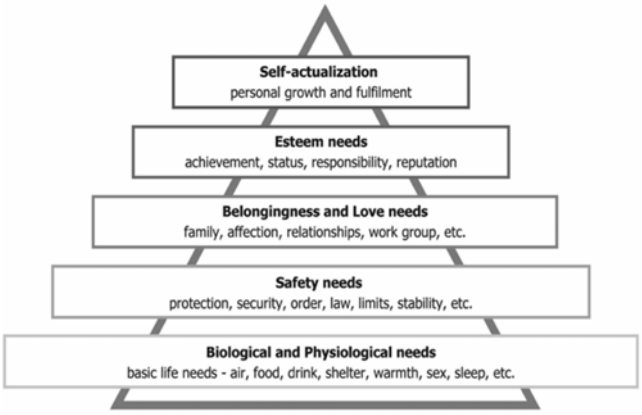



**Figure1:** Hierarchy of human needs (Maslow., 2021, pp. 358-379)

How do we design for the physical, physiological, and psychological needs of occupant-users in smart housing? Norman (Norman, 2018)

**Smart city**

Urban architects use smart devices including smart applications and electronic means to discover the relations between smart parts of the city and to design smart networks (Ismagilova, 2019, pp. 88-100) (Singhand et al, 2019, pp. 1-23) (Barletta, 2020) Using a smart urban model and theoretic approach of this system, smart plans and models in smart urban spaces can be provided (Caivano, 2020, pp. 2-23).

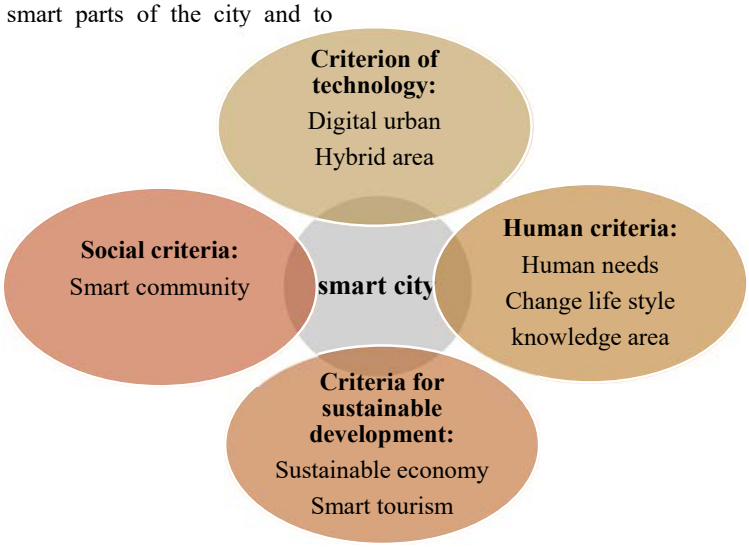



**Figure2:** The main criteria of the smart city(author)

Intelligence in developing cities can meet human and environmental needs, although innovative strategies in the fields of economy, environment and creation areas with a green attitude and modern technology can also be accompanied. (Fermenia-Serra, Beuhofer, & Ivars Baidal, 2019, pp. 109–133)

**Criteria of smart cities**

Digital technology and the use of smart environments can greatly help in the field of optimization and the creation of successful urban places. Smart urban areas are planned and developed based on human needs. Although intelligence is not really about technology and its application, which is actually to expand smart cities can be mentioned the following:

- Smart areas in cities using computers and sensors can provide a quality environment for humans. (Overview—Guide, 2020)
- Cities developed by smart technology will meet the needs of individuals, administrations, governments and the needs of society, and will lead human societies towards social sustainability and revenue generation. (Chun Sing, 2020, p. 291) (Table 1)

**Table 1:** Review of case studies (The author with the help of the article: (Orlowski & Romanowska, 2019, pp. 118-131)

| Smart City | Design choices / Cases | Development Path | Key features |
|---|---|---|---|
| **Barcelona** | - Smart transportation infrastructures<br>- Smart public transportation<br>- Smart interaction | Supportive community | Participation of people in creating quality urban spaces using smartening |
| **Masdar** | - Smart interaction<br>- Building energy efficiency<br>- New technologies for utilities | Economic growth in urban areas | Sustainable economy by using technology-related jobs |
| **Amsterdam** | – Two – way communication<br>– Smart transportation infrastructures<br>– Smart public transportation<br>– Smart interaction | Creating innovative and new jobs | Innovation in services<br>Quality in life |

Smart technology in cities includes application components that can be named as follows:
1. Provide urban infrastructure
2. Information technology in the field of prosperity in cities
3. Flexibility and its application in the field of urban transportation
4. Presenting theories related to collective welfare (Orlowski & Romanowska, 2019, pp. 118-131)

**Urban Artificial Intelligences**

Applied intelligence in making urban areas smart can be employed in the field of productivity and technology in cities. (Cugurullo, 2020, pp. 2-38) Moreover, applied intelligence in smart areas becomes a strength and can turn weaknesses and threats into positive points. (D'Amico, 2020) (Macrorie, 2020)

**Tourism and walking in historic cities using smartening**

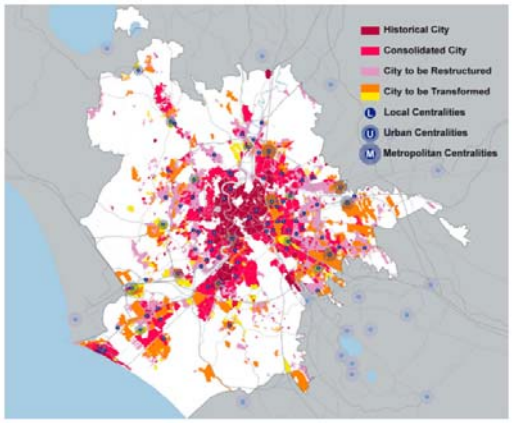
Walking can be a type of tourism that tourists can benefit from in their travels. (Hall, 2018) Additionally, walking can be considered as a kind of human attraction to urban spaces, to achieve this method, the walking route can be planned from point A to point B and also has a positive effect on attracting users to see and enjoy along the routes.
Walking can even be a goal for spending time. (Karupiah, 2018, pp. 199-214) Historical urban environments in terms of attraction and special potentials (monuments and historical buildings) can be active at different levels. Among these layers, we can mention the functionalization of adjacent spaces on sidewalks, such as restaurants, hotels, public services, cafes, etc., which are adjacent to sidewalks for better access, or some on the sidewalks. (Garay Tamajón, 2018, pp. 7-33)

**Smart tourism**

Smart tourism is the use of smart technology and platforms to exchange information between tourism and the surrounding environment. One of the strengths of a smart city for tourism attractions is economic efficiency from tourism growth, and sustainability of historical and tourist areas. For instance, tourists can use smart platforms that they install on their mobile phones to access services such as hotel reservations, cafe menus, and nearby tourist areas. (Industria, 2018)The history of sidewalks for tourists in historic urban areas suggests that this approach can provide human mobility and economic sustainability for retailers and restaurants. Valuing a city's historic complexes that can be connected to each other via sidewalks can enhance security. A security that is away from public transportation and does not damage antiquities, tourists can easily walk-in space, and this means the stability of the historical environment. (Henderson, 2018, pp. 285-297) (Kanellopoulou, 2018, pp. 298-315) (Morris, 2018, pp. 316-329)

**Case Study (Rome - Vatican)**

Today, tourism in historical urban areas has turned into a feature of tourism, which, it is required to pay attention to historical and tourist places as a positive response to attract tourists. Walking on tourist routes can increase the comfort of the environment away from air pollution and overcrowding, and increase people's satisfaction and enjoyment of the route. (MichelaLe.Piraa, 2021)
Rome as a land with a rich history can be chosen for smart approaches. In terms of strategic location and tourism, this land can make significant progress in terms of location, sustainable planning, economic development of tourism, and so on. (Gemmiti.R., 2019, p. 196) Therefore, as a case study in the subject of this article can be selected by examining the potential of the situation, history and tourism. As you can see (Figure 2), in the center of Rome are located ancient and historical sites, which itself is a large area of a historic city. (Gemmiti.R., 2019, p. 196) The existence of a sidewalk connected between historical places has made it attractive to see this place for walking.



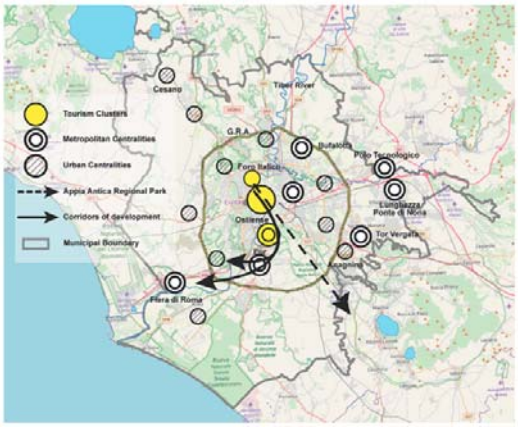




Figure 4 Figure 5

**Figure 3.** The main plan of the Rome region based on urban stratification. (http://www.urbanistica.comune.roma.it/prg.html.)

**Figure 5.** Tourist areas in Rome. (Gemmiti.R., 2019, p. 196)

**The main problem of case studies**

One of the main problems in the city of Rome (Italy) is the lack of attention to the city's sidewalks for the passage of tourism from one destination to another. As you know, the Vatican area in Rome is known as a historic urban plaza in the world, so tourists on the trails need special conditions such as legibility, routing, public services, and .... Lack of attention to the future of tourism and dissatisfaction with tourists walking in this city and the lack of smart facilities (such as: special software to guide tourists, smart sidewalk network, urban infrastructure or smart lighting) in line with one of the main problems of this particular area.

Therefore, practical guidelines can be provided to for this problem by examining the characteristics of smart routes. Another problem is the economy, which has experienced recession in Italy in recent years. Entrepreneurship can be one of the main solutions to the economic downturn. Accordingly, the idea of a smart city can be an entrepreneur and a new step can be taken in the subject of virtual urban development and stable growth. The economy could grow in any tourist area, but only if that area meets its potential for innovation and modernization. So, a sustainable economy can be in the realm of smart living.

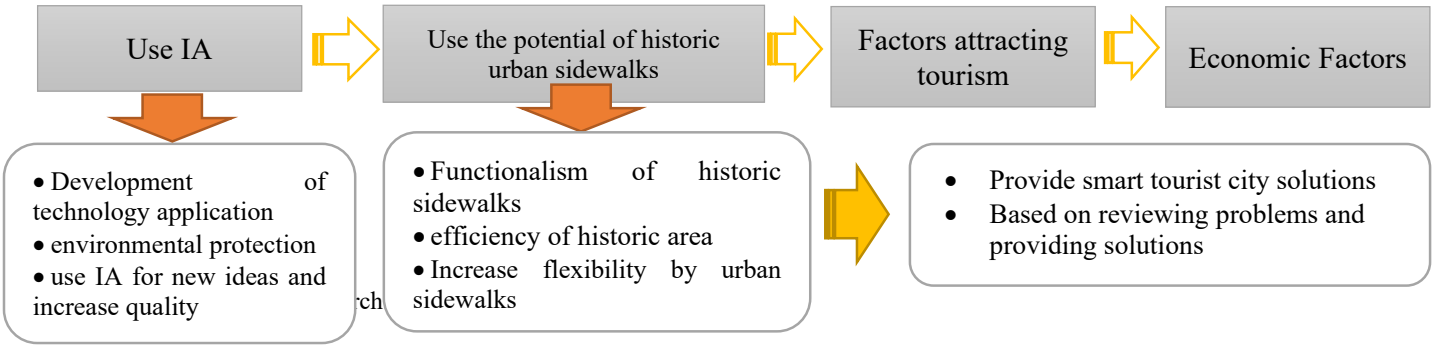
Some theorists maintain that making cities smart helps people migrate to cities to use technology and improve their living standards, while identifying their own basic needs. (De Jong, Joss, Schraven, Zhan, & Weijnen, 2019, pp. 25-38) Intelligence for the foundation of cities can be enhanced by using sustainable technology to sustain cities and human environments. (Allam, 2018, pp. 4-25)

**Methodology**

The inquiry about the strategy of a case considers based on the introduction of the specified criteria. that will be developed and reviewed according to the research criteria.

The research method based on these cases is step by step:

1. Problem statement
2. Expression of research hypotheses
3. Collection of research theories and components
4. Analysis of research findings using quantitative and coding methods. (Figure 4)




**The method of the present research is qualitative and quantitative**.

The qualitative method of the present study has been analyzed based on the findings and literary sources to examine the theoretical foundations and to

recognize the theories and basic components of the research in the research background of zero energy smart cities or artificial intelligence and its application in historical tourist cities. The sources of scientific articles and texts in Researchgate.net, Academia.edu, and Google Scholar have been used to reach the basic research criteria.
In the second stage, the use of quantitative research methods has been used to prove the hypotheses and provide solutions for the purposes. This research was based on a quantitative methodology (questionnaire) for accuracy, ideological compatibility, validity, reliability and presentation of objective data according to theoretical foundations.
The three characteristics of numerical measurement are reliability and credibility, measurements are based on the characteristics and qualitative components studied and the reliability of the instrument is stable and coherent and the numerical and coding methods can be used many times in other cases.
Open questionnaire of some questions from professors of urban planning and architecture (in person), open-ended questions to identify and examine strengths and weaknesses in smart cities.
A closed questionnaire including 12 questions from citizens living in developing cities (online), Closed questions for descriptive statistical analysis (mean, standard deviation), for readability and logical method of comparisons with numerical data, the questionnaire followed a three-part design:

- Components
- theories
- Criteria

**The First Step**
The present study uses **SPSS** statistical software to analyze this and review the results of the questionnaire and all the results of this research have been extracted from SPSS 16 software.

**The Second Step**
Validity and Reliability of the Questionnaire - Cronbach's Alpha.
One of the most common methods for assessing the reliability of questionnaires is to determine the internal correlation of the questionnaire questions, which is done through Cronbach's alpha coefficient. Cronbach's alpha coefficient is closely related to the internal coordination of the questions and its value is theoretically between zero and one; But the general rule is that the Cronbach's alpha value of a comparison should be at least 0.7. (Table 2)

**Table 2:** Check the Cronbach's alpha (author)

| **Reliability Statistics** | | |
|---|---|---|
| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
| 0.7 | 0.7 | 120 |

The number **0.7** is extracted for Cronbach's alpha. Therefore, the validity and reliability of the above questionnaire can be extracted that the present questionnaire has validity and reliability.

**The Third Step**
Statistical Society
In the scientific definitions of a statistical society, people from a society who live in a society with one or two similar characteristics are called a statistical society. In fact, the researcher asks the statistical population about the characteristics of the variables and research criteria.
The target population is people in different cities and questionnaires have been filled in randomly and online for sampling.
The volume of the statistical population is **120** people, calculated based on the Cochran's formula:
The sample size is equal to: 120
5% error rate
Therefore, 120 people should be questioned in this research.
In fact, the current statistical community of citizens in different cities is online.

**The Four-Step**
Evaluation of the proof of the three main research factors in the questionnaire (human needs, sustainability of historic cities and smart cities) has been done with a lot of homogeneities and also using research tools.
The following table is based on three main factors of research and emphasis on questionnaires and statistical analysis, as the mean and standard deviation show that:
In the first stage of the test, there is no difference between the relationship between the components of the research and the number **P** is equal to **0.001** and based on these three main areas of research, they can have a clear and meaningful relationship with each other. (Table 3)

**Table 3**: Evaluation of Analysis Characteristics of Questionnaire Factors Based on Model (CCBQ). (author)

| Factors | $X^2$ | df | P | GFL | AGFI | CFI | RMSEA |
|---|---|---|---|---|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| The three main factors of research | 589/508 | 5/698 | 0/001 | 0/87 | 0/901 | 0/749 | 0/076 |

The correlation matrix was examined in order to make historic cities smarter for tourism development. Accordingly, the numerical relationship between coding to make tourism city smarter, obtaining the number 1 in all cases indicates the establishment of a numerical significant relationship between variables. (Table 4)

**Table 4:** Examining correlation coefficient matrix of the secondary and main factors of the questionnaire and the total score. (author)

| Criteria | Artificial intelligence and productivity | Human needs | Economy | tourism development | Preserve the environment | Total score CCBQ |
|---|---|---|---|---|---|---|
| **Artificial intelligence and productivity** | -0/01 | | | | | |
| **Human needs** | 0/22 | 1 | | | | |
| **Economy** | 0/31 | 0/37 | 1 | | | |
| **tourism development** | 0/41 | 0/28 | 0/56 | 1 | | |
| **Preserve the environment** | 0/89 | 0/35 | 0/22 | 0/61 | 1 | |
| **Total score CCBQ** | 0/91 | 0/80 | 0/59 | 0/61 | 1 | 0/86 |

Friedman-test

In quantitative research, the Friedman-test can be described as a non-parametric one, which is examined based on the analogy of several categories at the desired levels. In the present study, the Friedman-test was based on the answers to the questions that were analyzed in the field of variables. (Table 5)

**Table 5:** Friedman test to identify the level of important parameters of the questionnaire and use those parameters in the conclusion. (author)

| | N | Mean | Std. Deviation | Minimum | Maximum | Variables |
|---|---|---|---|---|---|---|
| q1 | 120 | 4.3333 | 2.37069 | 2.00 | 4.00 | Artificial intelligence and productivity |
| q2 | 120 | 4.2500 | .75378 | 3.00 | 5.00 | |
| q3 | 120 | 3.7500 | 1.13818 | 1.00 | 5.00 | |
| q4 | 120 | 3.6667 | 1.30268 | 1.00 | 5.00 | Human needs |
| q5 | 120 | 2.2500 | 1.13818 | 1.00 | 5.00 | |
| q6 | 120 | 2.3333 | 1.15470 | 1.00 | 5.00 | |
| q7 | 120 | 3.4167 | .90034 | 1.00 | 4.00 | Economy |
| q8 | 120 | 3.8333 | .93744 | 2.00 | 5.00 | |
| q9 | 120 | 4.4167 | .66856 | 3.00 | 5.00 | |
| q10 | 120 | 3.0000 | .73855 | 2.00 | 4.00 | tourism development |
| q11 | 120 | 3.5000 | 1.24316 | 1.00 | 5.00 | |
| q12 | 120 | 2.5000 | 1.08711 | 1.00 | 5.00 | |
| q13 | 120 | 4.0833 | .90034 | 2.00 | 5.00 | Preserve the environment |
| q14 | 120 | 3.1667 | .93744 | 2.00 | 5.00 | |
| q15 | 120 | 4.0000 | .60302 | 3.00 | 5.00 | |

(The criterion is based on the number of positive answers to each question)

**The first step: Human needs**

**Why was Maslow's theory selected in this study?**

In general, human beings need attention at any time and place, so human beings need to use technology over time, and this issue has a great impact on the human future, since the use of technology and changes in human needs in relation to the development of tools and cities, etc., can change this theory as the whole and turn it into an innovative and up-to-date approach. Smart cities can manifest the Maslow's theory using the impact of technology on human life and his or her wants and desires. Thus, by examining the impact of technology on changing human needs, the Maslow pyramid can be turned into a futuristic theory. In general, by examining the criteria of basic human needs (Maslow's pyramid) and comparing them with the criteria examined in this study, we can improve Maslow's theory and refer to theories in the area of human needs in the future (Maslow Pyramid from the perspective of human in the city). (Figure 5)

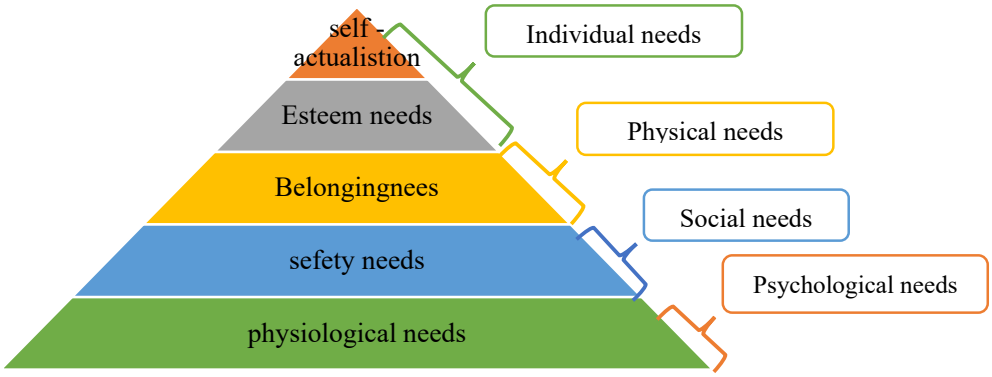



**Figure 5:** The Needs of Human Life Based on a Study of the Maslow Pyramid(author)

In comparison, each film with the basic human needs and how human needs change in smart cities, or in other words, the change of human needs in the future can be examined in the form of diagrams. (Figure 6)

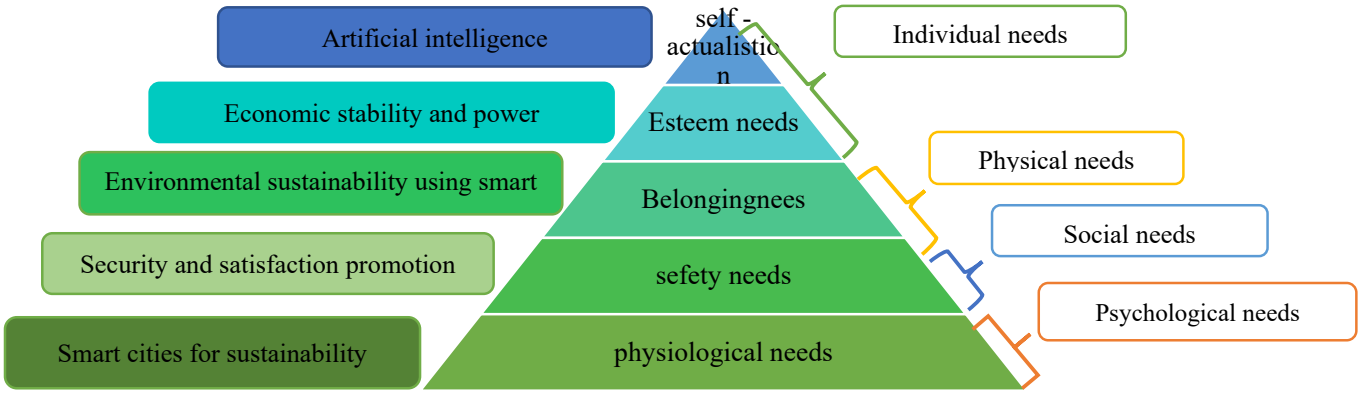



**Figure 6:** Changes in human needs according to the criteria of smart cities. (author)

Modern life depends on technology for quantitative and qualitative improvement. Human wants to use his or her mentality to find objectivity at any time, based on the need for comfort and well-being. Thus, paying attention to the principles of human needs can provide environmental sustainability. In the path that environment creates human, worldviews (value concepts) are important, and for these environments, which are valuable for place designers, it is necessary to plan based on scientific principles and provide fundamental conceptual plans from a human perspective.

**The second step: AI**

Artificial intelligence is a definition of technology that can be used in various fields. In general, humans can use artificial intelligence to model the intelligent world in which coding and programming can meet human needs in the future .In fact, the need of the next generation for artificial intelligence in various fields such as agriculture, urban planning, industry, etc. can be mentioned. (Figure 7)

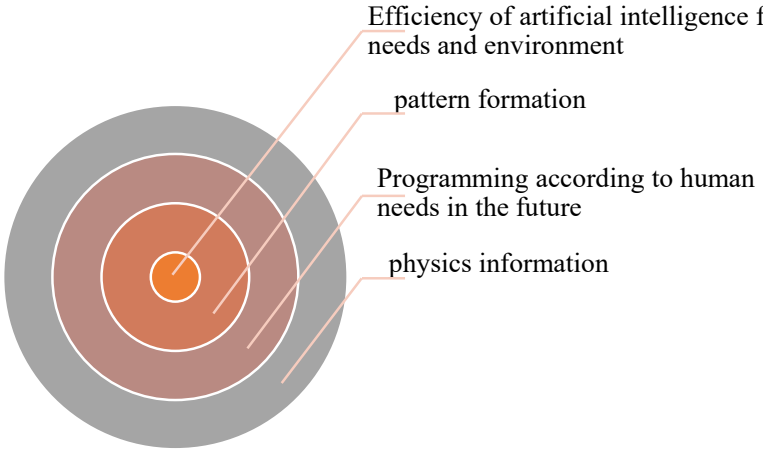



**Figure 7:** Layers of artificial intelligence. (author)

**The third step: Applying qualitative and quantitative research findings on a case study**

Tourism destinations can be made smart by using technology that tourism spaces can be formed based on technology, human and economic needs. To make the city of Rome smart, it is possible to use smart technologies such as using special programs in the desired area and defining public urban spaces. Such as: hotels, restaurants, cafes and toilets, and in the second stage, defining historical spaces and antiquities and the tourist trail. Forsooth, using a smartphone and internet connection in the desired area, smart tourism can be provided.


**Figure 8:** Walking map of the Vatican City.

For example, as you can see in the map: (Figure 8)

The first point for tourists is St. Pierre Church
The second point of the Vatican Museum
And finally, this historic sidewalk leads to the 14th point of the Plaza of Venice.

An internet map will be provided to you to walk through the historical places of the Vatican City one after another using the sidewalk and watch the tourists.

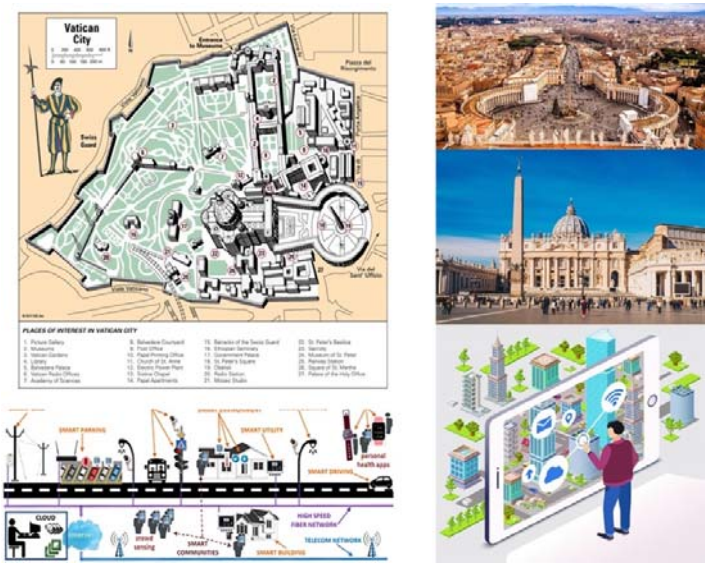



**Figure 9:** Using the guide map on the platform and the software on smartphones, you can easily reach historical destinations and tourism services by walking. (Figure 9)

**Discussion**

By investigating the characteristics of a smart city and changing human needs in tourist places, it is possible to address the sustainability indicators of tourist cities. Promoting digital culture and utilizing technology on a tourism scale can enhance historical and tourist-friendly cities in terms of quality. The main aim of the study was to provide solutions to problems in the city of Rome for tourists in the digital age. The effect of using smart tools based on the needs of tourists in the city of Rome - the Vatican historical area can be highlighted in the level of tourism attraction. Using the benefits of platform technology for smart projects can have a significant impact on improving the quality of places and tourism services.

In accordance with human needs regarding the creation of smart tools for tourism and high productivity, the positive effect on sustainable tourism and smart tourism destinations were discussed in a case study.

The use of smart tools in tourist-historical cities can support public and private institutions and can be expanded in terms of providing optimal tourist services and tourism content. Thus, the development of the tourism ecosystem with regard to smart services and the establishment of smart sidewalks can help create a potential for business development and utilization of new technologies and sustainable development. Smart historical cities are promoting ICT sustainability and development. However, information technology can be used for all municipal services and lead cities to functional smartening for the general public. According to three main criteria of technology (smartening), tourists' needs, and protection of historical sites, the use of digital tools for tourists can expand urban infrastructure. The concept of a smart tourist destination means that it can have a significant impact on the environment, visitors and citizens with the aim of improving tourism conditions. To meet this goal, the use of up-to-date knowledge and advanced smart tools in tourist destinations can help adopt a sustainable approach with high productivity and smartening. According to the qualitative and quantitative results of the study, we can refer to the category of smart sustainable development of tourism destinations:

Economic sustainability and entrepreneurship development: With the participation of smart tourism and the use of digital technology in attracting tourism to tourism destinations, it can lead to income generation and entrepreneurship in the tourism industry and the development of new jobs.

Sustainability of historical environments: The use of smart tools does not have a negative impact on the environment, and it can even prevent the traffic of cars in historical places by smartening historical destinations through by using a pedestrian-based approach. It can also prevent the erosion of historical streets or noise pollution (car noise) and air pollution, etc.

Sustainability of tourists' needs: Human needs can change over time, because the advancement of technology changes the individual and social needs of people.

Thus, based on futurism and technological advancements, the smartening of historical spaces in historical destinations can be planned for tourist purposes.

Based on qualitative and quantitative data, a smart destination for tourists can be built and smart sustainability can be defined for it. Expansion and use of smart tools in tourist urban spaces can provide

a smart domain for the preservation and protection of cultural-historical heritage.
The combination of technology and information on antiquities to attract tourism can lead to sustainable tourism development. For example: by installing Wi-Fi or memory on the sidewalks, it is possible to install a digital media and install the desired software on the tourist destination on the mobile phone and use its facilities..
The use of artificial intelligence and even simulating walking in tourist destinations can be another solution. In other words, we design the desired destination virtually and attach it to the virtual city system or Metaverse so that the tourist can use his or her mobile phone to have a correct understanding of the space, historical places, and facilities. Another solution that can be offered is to focus on the digitization of historical monuments and even virtual tourism, which is based on content creation and social networks during pandemics (for example, during coronavirus).

**Conclusion**

Sustainable development axes based on tourism smartening can be used as an innovative strategy in cities. The importance of this term affects the improvement of smart spaces and tourism goals, since both are based on methodological thinking with economic and smartening approaches for the progress of the city using the available assets and opportunities. By examining the research criteria, it can be observed that there is a growing need for ICT for the goals of smartening tourism destinations, since tourism can apply technology and smart tools to use services and enjoy this journey.
Qualitative and quantitative analysis of research based on the obtained data shows that smartening is one of the basic human needs in the present age. Based on the answers to the questionnaires and the study of the problems of the case study (Rome-Vatican historical area), the results showed that the solution has positive impacts and high potential, since the respondents of the questionnaires in most cases have emphasized on smartening of cities and tourism destinations and have given a positive answer.
Another strong point of this project can be the promotion of walking in historical areas using technology, which leads to attracting the audience and preserving antiquities in the industrial world. According to the qualitative and quantitative results of the study, the following recommendations can be presented to solve the problems of the research sample Rome-Vatican historical and tourism area):

**Recommendations in the area smart of tourism and tourism attraction:**

1- Installing public internet in historical and tourist areas
2- Creating software specific to the area (definition of spaces, infrastructure, accesses, history of buildings, etc.)
3- Providing a smart platform to access sidewalks and reach destinations and historical monuments
4- Using virtual displays to better imagine the environment on smartphones
5-Providing virtual tourism on smart software

**Recommendations in the area of economic problems:**

1- Entrepreneurship in the field of creating smart platforms
2- Improving the business of hotels, restaurants and tourism services using virtual platforms and being recognized by tourists via software
3- Economic development of the region by attracting tourists to a smart historical space
4- Elimination of public transport for tourists and its impact on walking and use of tourism service

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