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Research Article

Evaluating Intelligence Indicators in the Sustainability of Small Cities Case Study: Nowshahr

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Abstract: Today's smart cities depend on broadband systems for every aspect of their operations. Urban systems for transportation, energy, health and education, water, sanitation, and other vital services are highly dependent on broadband networks. People in a real smart city, with better equipment to enjoy the opportunity that a smart city provides for individuals, neighborhoods and society as a whole, have the opportunity to live safer, better and more prosperous. The purpose of this study is to evaluate the indicators of intelligence in the sustainability of Nowshahr as one of the small cities in the country. Since the present study has a local-local character and is based on and using the context and context of the existing theories, principles and laws in order to answer the questions and achieve the goals, it is an applied research. Questionnaire, interview and field observation tools were used to collect information. In examining the correlation coefficient between smartening and sustainability, it has been determined that there is a direct and strong correlation between these two variables in Nowshahr. The results of the t-test of some samples show that the status of intelligent variables in Nowshahr is not in a good position with a stability approach. The results of factor analysis have shown that among the six indicators of intelligence, "smart governance" with a factor load of 0/853 has gained the highest priority from experts and specialists in smart Nowshahr with a sustainable approach. Then "smart people" with a factor load of 0/847 and "smart environment" with a factor load of 0/836 have the highest importance in terms of average factor load. In order to develop the level of intelligence and sustainability in Nowshahr, the strategy of urban smartening strategies can be developed by the city management, along with local sustainability indicators to improve the level of services to citizens. Development of intelligence level of environmental indicators (such as energy, land use, environment, and ...) can be raised too.

Keywords: smart city, smartening, small towns, urban sustainability, Nowshahr.

Introduction

Population growth and urbanization pose a wide range of issues and challenges for urban planners and managers, and it is obvious that if they are not controlled and managed, serious crises and widespread instability in urban spaces may occur

(Dodgson & Gann, 2011: 109). In such a context, the search for new approaches to reduce environmental, economic, physical and social issues becomes even more necessary. "Smart city" with indicators such as smart governance, smart environment, smart economy, smart mobility, smart life and smart people, seeking to achieve urban sustainability, development of network infrastructure; Entrepreneurship Development; Increase residents' access to public services, in order to promote justice and social inclusion; Development of creative urban industries; And the development of social and communication capital. The 21st century is the century of cities, so cities play a central role in the economy and are the driving force in global competition, information, development and innovation, and are becoming globally integrated poles and service-based societies with greater influence and responsibility. They are also a place to concentrate physical and human capital, with 80 percent of the world's GDP coming from cities, and by 2050, 600 of the world's largest cities are projected to produce 60 percent of the world's gross domestic product. (Mckinsey global institute, 2011), but urbanization, in spite of great achievements for human beings, has brought with it problems and problems that, despite great scientific and technical advances, have solved many of these problems with failure. Cities currently consume 75% of global energy and generate large amounts of waste (Ferraro, 2013) and 70% of greenhouse gas emissions from cities (Colldahi et al, 2013), which contribute to climate change and air pollution. And the environment. On the other hand, the rapid growth of cities is not commensurate with the capacity to expand their infrastructure and imposes increasing pressure on urban infrastructure. Therefore, they always suffer from adverse consequences.

This situation is more complicated in developing countries, including Iran, which is under increasing pressure to provide more and better basic services to the growing population. Cities, therefore, are inherently complex and vastly interrelated challenges that can only be addressed through a systematic approach. In other words, the huge crowds of residents have led to chaos and disorder, creating conditions that have not only upset the balance of cities, but also made it impossible to achieve sustainability with current methods of urban management and development. So the old institutions and the old ways of governing and governing are in conflict with the complex and rapidly changing world. As a result, urban planners around the world try to develop models for the development of 21st century cities in order to meet the new demands and expectations of today's world by looking at all aspects of urbanization (Pourahmad et al., 1397). In other words, the necessity and requirements of these challenges have driven many cities in the world to find smarter ways to manage them. One of the new concepts to address the current challenges of cities in the field of urban planning is the development of smart cities, which has attracted much attention in recent years. Smart city has been introduced as the axis of change and development and means the opening of new concepts in urban planning that combine the capabilities of real and virtual world to solve urban problems.

The huge amount of data generated in the urban space, together with the advances that have been made in information and communication technology, provides unprecedented opportunities to meet the great challenges that cities face. One of the basic foundations of a smart city is access to real-time information on citizens' actions and choices. Access to real-time information in the smart city makes it possible to identify and identify behavioral and normative patterns (both city-wide and individual-level), which is invaluable. This makes it possible to observe the invisibles (in order to understand what is going on) and the behavior of a city over different periods of time, making it possible to influence and model them. At present, many countries in the world have resorted to virtual world approaches and solutions to solve the problems of the city, which cannot be solved with classical approaches, in order to make the most of the capabilities of their urban life. Despite the fact that the concept of smart city has become a very popular topic of research in all scientific fields, and despite the widespread use of this term and extensive efforts to explain it, there is still a clear understanding and general consensus among scholars and academics about the concept. , Meanings and what properties, elements or components it contains (due to different perspectives from different fields of knowledge) do not exist. Studies show that researchers in various fields of science have proposed a variety of content of the term and have used a range of conceptual types instead of intelligent adjectives. So that some have emphasized the dimensions of technology and others believe that in a smart city the adoption of technology is not the end of the matter and have highlighted the development of human and social capital and physical infrastructure. The term smart city and its roots should be traced back to the smart growth movement that emerged in the late 1980s and early 1990s and advocated new urban planning policies (Harrison & Donnelly, 2012). Based on the smart growth approach, development decisions affect everything from personal life to communities and nations. In order to overcome the side effects of development, smart growth strategies can help maintain and develop healthy, safe, comfortable and attractive urban environments (Karadag, 2013). The term smart city was first used in the case of Brisbane, Australia, and Blacksburg in the United States, where ICT supported social participation, reducing the digital divide, and access to services and information (Alvarez et al, 2009). Smart cities have emerged as a tool for visualizing the urban fabric. They evolved rapidly after the 1990s but slowly since the early 2000s (Habitat, 2015). The term re-emerged in the mid-2000s through some technology companies such as IBM (2009), Cisco (2005) and Siemens (2004) to integrate information systems and urban services and infrastructure. These infrastructures and services include buildings, transportation routes, electricity, water and sewage infrastructure, security and healthcare. In fact, since 2000, the smart growth approach has given way to the smart city, which is based on advances in information and communication technology in planning, sustainable development and urban services (Harrison & Donnelly, 2011) and since then means any The type of technology-based innovation has evolved in the planning and development of urban functions (Alvarez et al, 2009).

So many governments have found that they have access to sources of free information obtained through some trading targets such as water, energy bills, tolls, and so on. This public perception has led to the penetration of technology and attention to smart infrastructure around the world (Harrison ^ ^ Donnelly, 2012). The California Institute for Smart Communities was one of the first to focus on how to make communities smarter and how to design cities based on information and communication technology (Alawadhi et al, 2012). Many major cities around the world, such as Seoul, New York, Tokyo, Chicago, Amsterdam, Cairo, Dubai and Kochi, have launched smart city projects. In addition, many industrial and international organizations developed the Smart City Agenda. Examination of existing study sources shows that the background of internal studies in relation to the smart city is very limited and the smart city in Iran is a completely new category and has recently been introduced and is in the early stages. Therefore, here is a part of the existing background and theoretical literature that is foreign. Andrea Caraglio et al. In 2009 in an article entitled "Smart Cities in Europe" on six main axes in a smart city (use of network infrastructure, emphasis on business, social inclusion of various urban residents in

public services, creative and high-tech industries) Deep attention to the role of communication and social capital in urban development and ultimately social and environmental sustainability) emphasize and conclude that there is a positive relationship between urban wealth and the presence of creative professionals in a smart city (Caragliu, 2009). Nam et al. Have developed another framework for conceptualizing smart cities. According to them, the key factors are: technology, people and institutions. They rediscovered the dimensions of smart cities: technology (as a tool for innovation), organization (for innovation management), policy (for creating a powerful environment), and environmental conditions (Nam ard ^ ard Pardo, 2011). Anastasia (2012) in a research paper entitled "The concept of smart cities; Towards the development of communities »expands the concept of smart city by exploring its various meanings, potentials and key dimensions for the development of communities and points out that the development of broadband network (wireless, satellite and cable, etc.) to a large extent potential The interaction of different actors affects individuals (small businesses, institutions and local governments) by providing access to information and knowledge resources throughout the city, as well as a wide range of tools for connecting locally and globally. Part of this article refers to the experience of the city of Trikala, which is the first smart city in Greece, and this city has received the award of the best smart city among 21 cities by the ECF for three consecutive years (2009, 2010, 2011) (Anastasia , 2012). Chorabi et al. (2012) in a study entitled "Introduction to Smart Cities; An Integrated Framework »While pointing to different definitions in the smart cities literature, the eight main factors in an integrated framework for the Smart Cities Initiative (1. Management and organization 2. Technology 3. Governance 4. Politics 5. People and communities 6. Economy 7. Introduce infrastructure and 8. Natural environment. They consider technology as a meta-factor that affects seven other factors (Chourabi et al, 2012).

The International Telecommunication Center in a February 2013 research paper entitled "Smart Cities; The Seoul Case Study Considers the Technological, Human, and Institutional Dimensions of Smart Cities, Frames the Smart City Framework, and Concludes that Urbanization Imposes Growing Pressure on Traditional Urban Infrastructure, and Information and Communication Technology is a Fully Practical Tool for Updating This Provides infrastructure to reflect the wants and demands of 21st century societies (ITU, 2013). In a 2014 study entitled "Smart City Policies: A Spatial Approach," MargitaAngelido emphasizes the cross-disciplinary nature of the smart city, the conflicting interests, and the different stakeholders in a city. There is no definition of these cities and we are faced with many definitions and solutions in this field without a well-known definition on a global scale. He calls all settlements that have made informed efforts to invest in information and communication technologies and strategic vision and seek effectiveness and competitiveness at multiple economic and social levels (Albino et al, 2015). Habitat (2015) in a thematic article entitled "Smart Cities" examines a variety of characteristics (sustainability, quality of life, urban and intelligence aspects), issues and topics (society, economy, environment and governance) and the required infrastructure Physical infrastructure, information technology infrastructure And communication) dedicated to this concept (smart city) and while emphasizing the rule of smart city, points out that smart efforts are expected to not only enhance the efficiency of complex urban systems, but also the quality and efficient delivery of basic services through Enhance a variety of electronics solutions, empower citizens through access to knowledge and opportunities, and address environmental challenges and catastrophic risks through empowerment through new technologies. It also reminds us of the need for 21st century urban models that are tailored to the unique needs of developing countries. Again in governing in the age of new media and improving citizens' access to online systems, it emphasizes the need for integrated planning and concludes that a participatory approach to development based on the right to human rights must be based on the inclusion of smart city approaches. He goes on to point out that this is a long-term process and cannot be achieved overnight, the transition to smarter, more flexible and more sustainable cities takes longer, and each city will probably have to take different paths. This process must be adapted to the complex, dynamic and evolving nature of cities and be able to constantly update its perspectives as a need. Finally, it provides general guidelines for action. (Habitat, 2015).

Materials and Methods

The research method is based on correlation method, which means that a significant relationship between smartening and urban sustainability has been investigated. Data collection was done by library and field methods (using a questionnaire, observation and interview). In data analysis, descriptive and inferential statistical tests (including Pearson correlation coefficient, one-sample t-test) were used. The statistical population includes the citizens of Nowshahr. According to the census conducted in 2016, the number of all people living in this city is 118015 people. According to calculations performed using the Cochran's formula and with a 95% confidence interval, the sample size is estimated to be 383 people. Table 1 presents the components of a smart city.

Table 1 Components of a smart city

Smart economy (Competitiveness)	**Smart people (human and social capital)**
8. Innovation spirit	1. Level of skills and competence
9. Entrepreneurship	2. Lifelong learning desire
10. Reputation and branding	3. Ethnic and social pluralism
11. Productivity and effectiveness	4. Flexibility
12. Labor market flexibility	5. Creativity
13. Willingness to operate internationally	6. Enlightened globalization
14. Transformability	7. Participation in the social life
Smart mobility (transport and information and communication technology)	**Smart governance (participation)**
19. Local access	15. Participation in decision making
20. National and international access	16. Public and social services
21. Availability of ICT infrastructure	17. Transparent governance
22. Secure transportation systems, Creative and useful to the environment.	18. Political strategies
Smart environment (natural resources)	**Smart living (quality of life)**
30. Pleasant natural conditions	23. Cultural facilities
31. Pollution	24. Educational facilities
32. Environmental protection	25. Health conditions
33. Sustainable resource management.	26. Tourist attractions
	27. Personal security
	28. Social cohesion
	29. Quality of housing

Source: Deputy of Infrastructure Research and production affairs, 2016

Findings

Nowshahr is located at 30 and 51 degrees north and 39 and 36 degrees east longitude. Nowshahr city is connected to the Caspian Sea from the north, to the Alborz mountain range from the south, to Noor city from the east and to Chalous city from the west. Its height above sea level is -9.2 meters. Nowshahr has two central parts and Kojoor (Figure No. 1).

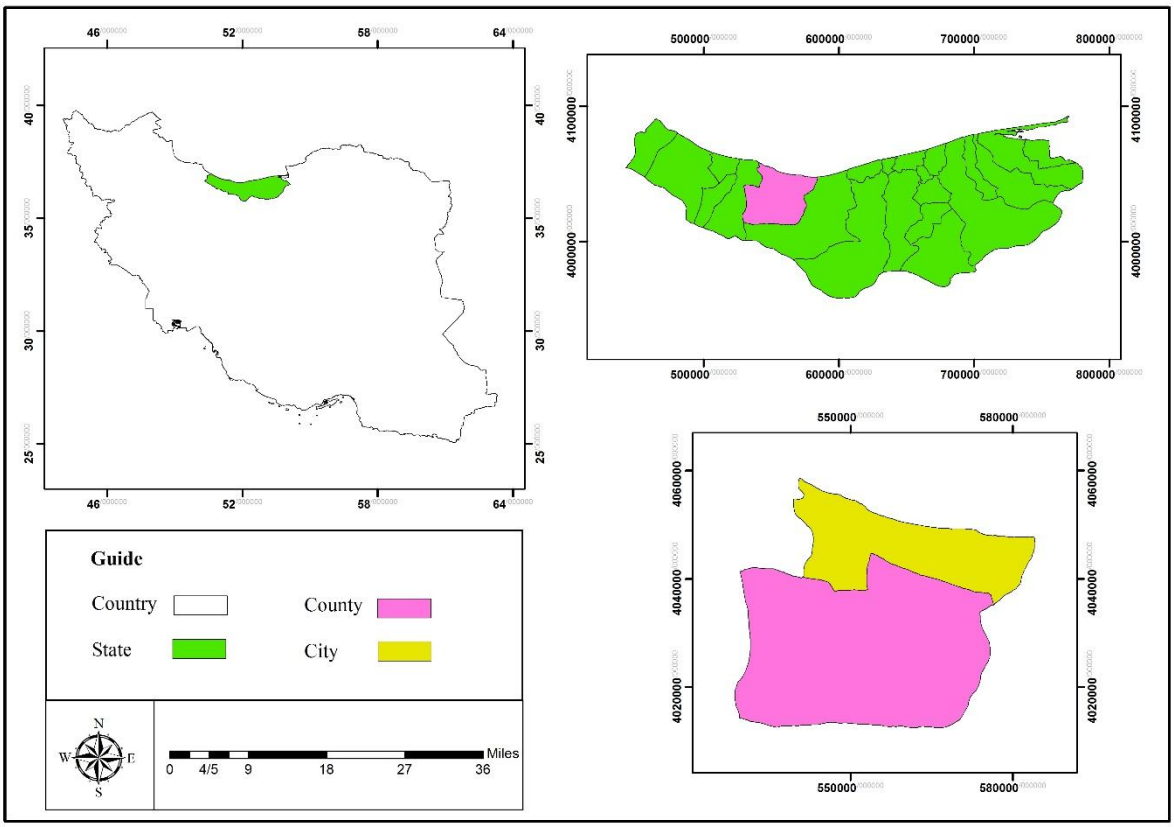

Figure 1- The position of Nowshahr city in the hierarchy of country divisions

The results of the descriptive data of the research show that out of 383 people in the statistical population, 46/5% are women and 54/5% are men. The largest number of respondents with 57% are in the age group of 26 to 45 years. Most respondents have a bachelor's or master's degree (61%). The percentage of employed people among the respondents constitutes 50% of the total sample size. Of these, 42% are government employees and 58% are private sector employees. In the studies conducted, Nowshahr has been studied in terms of intelligence status and the findings show that despite the fact that this city has administrative, commercial, cultural and service capacities, nevertheless, the intelligence status in this city as one of the cities Small is low in Mazandaran province. The results show that the intelligence of the city is equal to 2/64.

Table 2 - Status of intelligent variables in Nowshahr city

Average of	**Smart city variables**
2/56	smart people
2/81	Smart economy
2/43	Smart governance
2/36	Smart mobility
2/72	Smart living
2/96	Smart environment
2/64	**Intelligence of Nowshahr city**

Source: Findings Research, 1400

Discussion

Pearson correlation coefficient has been used to measure the relationship between intelligence and sustainability in Nowshahr. The results show that the significance rate is equal to 0.000, and this means that there is a significant relationship between the level of intelligence and urban sustainability. In other words, the more intelligent the city is, the more stable it is .

Table 3 assessing the level of relationship between intelligence and urban sustainability using Pearson correlation coefficient.

Intelligence level	Sustainability rate	Analysis of relationship	
0/866**	1	Pearson	Substantiality
0/000	-	Significance level	
1	383	Number	
1	0/866**	Pearson	
-	0/000	Significance level	
383	383	Number	

****The correlation coefficient is less than 0/01**

Source: Research Findings: 1400

Evaluations of the effectiveness of intelligence variables in Nowshahr with a sustainability approach using one-sample t-test

In this section, using one-sample t-test, the criteria affecting intelligence are measured and the results are presented below .

Assessing the effects of smart people variable on smartness in Nowshahr

according to Table 4, the result of one-sample t-test on the effect of smart people variable on smartness in Nowshahr shows that the value of one-sample t-test (- 16/125) with 0/95 confidence is a significant statistical difference between the two There is a real average (2/56) and a hypothetical average (3). Moreover, according to the results of this table, the actual average value is lower than the assumed average value. Therefore, it can be claimed that the situation of the intelligent people variable in Nowshahr is in an unfavorable situation and the hypothesis H0 (no effect of the intelligent people variable in Nowshahr city) is confirmed against the hypothesis H1 (the effect of the intelligent people variable in Nowshahr city).

Table 4 - The result of a single-sample t-test of the effect of the smart people variable on the smartening of Nowshahr city

0/023	Standard error of mean	Smart people	383	Number of samples
0/365	Mean difference		2/56	Average
-16/125	value of t		3	t value (theoretical average)
0/000	Significance level		382	Degree of freedom
Confirmation H_0	Test result		0/441	Standard deviation

Source test result: Research findings, 1400

Assessing the effect of smart economy variable on smart Nowshahr city

Table No.5, t-test result Single sample required by smart economy variable on smart Nowshahr city Indicates that the value of one-sample t-test (-13/202) with 0.95 confidence is a significant statistical difference between the two real means (2/81) and the hypothetical mean (3). In addition, according to the results in this table, the

actual mean value is lower than the assumed mean value. Therefore, you can claim that the status of the smart economy variable in Nowshahr is normal and the hypothesis H0 (no control over the smart economy variable in Nowshahr) is confirmed against the hypothesis H1 (the effect of the smart economy variable in Nowshahr).

Table 5 - The result of one-sample t-test of the effect of smart economy variable on smartening of Nowshahr city

0/040	Standard error of mean	Smart economy	383	Number of samples
-0/529	Mean difference		2/81	Average
-13/202	value of t		3	t value (theoretical average)
0/000	Significance level		382	Degree of freedom
Confirmation H_0	Test result		0/781	Standard deviation

Source test result: Research findings, 1400

Assessing the effects of Smart governance variable on smartness in Nowshahr

According to Table 6, the result of a sample t-test on the smart governance variable on smart Nowshahr city shows that the value of the sample t-test (- 0/084 -) with a confidence of 0.95 is a significant statistical difference between the two real averages (2/43) and there is a given average (3). In addition, according to the results in this table, the actual mean value is lower than the assumed mean value. Therefore, you can claim that the status of the smart governance variable in Nowshahr is normal and the hypothesis H0 (no control over the smart governance variable in Nowshahr) is confirmed as opposed to the hypothesis H1 (performance of the smart governance variable in Nowshahr) .

Table 6- The result of one-sample t-test the effect of intelligent governance variable on smartening of Nowshahr city

0/032	Standard error of mean	Smarf governance	383	Number of samples
0/003	Mean difference		2/43	Average
-0/084	value of t		3	t value (theoretical average)
0/000	Significance level		382	Degree of freedom
Confirmation H_0	Test result		0/615	Standard deviation

Source test result: Research findings, 1400

Evaluation of the effects of smart mobility variable on smartness in Nowshahr

According to Table 7, the result of one-sample t-test on the effect of smart mobility variable on smartness in Nowshahr shows that the value of one-sample t-test (-0/042) with 0/95 confidence is a significant statistical difference between the two.

There is a real average (2/36) and a hypothetical average (3). Moreover, according to the results of this table, the actual average value is lower than the assumed average value. Therefore, it can be claimed that the status of smart mobility variable in Nowshahr is not in a good condition and hypothesis H0 (ineffectiveness of smart mobility variable in Nowshahr) is confirmed against hypothesis H1 (effect of smart mobility variable in Nowshahr) .

Table 7- The result of one-sample t-test of the effect of smart mobility variable on smartening of Nowshahr city

0/21	Standard error of mean	Smart mobility	383	Number of samples
0/007	Mean difference		2/36	Average
-0/042	value of t		3	t value (theoretical average)
0/000	Significance level		382	Degree of freedom
Confirmation H_0	Test result		0/712	Standard deviation

Source: Research Findings, 1400

Measurement of the effects of smart living variable on intelligence in Nowshahr

According to Table 8, the result of one-sample t-test on the effect of smart living variable on intelligence in Nowshahr That is, the value of one-sample t-test (- 0/741) with a confidence of 0/95 There is a statistically significant difference between the two real means (2/72) and the hypothetical mean (3). Moreover, according to the results of this table, the actual average value is lower than the assumed average value. Therefore, it can be claimed that the status of the smart living variable in Nowshahr is not in a good condition and the hypothesis H0 (ineffectiveness of the smart living variable in Nowshahr) is confirmed against the hypothesis H1 (the effect of the smart living variable in Nowshahr).

Table 8- Single sample t test result of the effect of intelligent life variable on city intelligence

0/49	Standard error of mean	Smart living	383	Number of samples
0/024	Mean difference		2/72	Average
-0/741	value of t		3	t value (theoretical average)
0/000	Significance level		382	Degree of freedom
Confirmation H_0	Test result		0/392	Standard deviation

Source: Research Findings, 1400

Measuring the effects of smart environment variable on smart city of Nowshahr

According to Table 9, the result of one-sample t test on the effect of smart environment variable on smart city of Nowshahr That is, the value of a single-sample t-test (- 0/587) with a confidence of 0/95 There is a statistically significant difference between the two real means (2/96) and the hypothetical mean (3). Moreover, according to the results of this table, the actual average value is lower than the assumed average value. Therefore, it can be claimed that the situation of intelligent environment variable in Nowshahr is not in a good situation and hypothesis H0 (no effect of intelligent environment variable in Nowshahr) versus hypothesis H1 (effect of intelligent environment variable in Nowshahr).

Table 9 the result of one-sample t-test of the effect of smart environment variable on smartening of Nowshahr city

0/62	Standard error of mean	Smart environment	383	Number of samples
0/039	Mean difference		2/96	Average
-0/587	value of t		3	t value (theoretical average)

0/000	Significance level		382	Degree of freedom
Confirmation H_0	Test result		0/208	Standard deviation

Reference: Research findings, 1400

Factor analysis of smart city variables in smart Nowshahr city with a stability approach

The researcher uses factor analysis to discover the structure of exploratory-infrastructure, a large set of variables affecting smart Nowshahr city. It is assumed that each factor is likely to be chained to another factor . Factor analysis follows four steps for the discovery, investigation and final identification of indicators affecting the smartening of Nowshahr city :

1. Sampling adequacy test related to indicators affecting the smartening of Nowshahr city with a sustainability approach ;
2. Matrix formation of factor correlation coefficients ;
3. Extraction of factors from the factor correlation matrix;
4. Rotation of factors in order to maximize the relationship between variables and factors whose value should be more than 0/5

Findings related to sampling adequacy test related to smart city variables in Nowshahr city with a stability approach

At this stage of factor analysis, we must first make sure whether the available data can be used for analysis or not? Therefore, the KMO index and Bartlett test are used, which are specified in Table 10 .

Table 10 - Adequacy of sampling

0/821	KMO index
4634/022	Bartlett test
382	degrees of freedom
0/000	significance level

Reference: Research findings, 1400

Because the numerical value of KMO index is 0/821 (suitable index is more than 0/6), the number of statistical samples is sufficient for factor analysis and The significance level of Bartlett test is less than 0/05%, which shows that factor analysis is a suitable factor model for identifying the variables of smart city in Nowshahr with a sustainability approach .

In Table 11, the data and results obtained from the extractive sharing of factors affecting the smartening of Nowshahr city with a sustainability approach are determined; Extraction coefficient of factors shows the extent of explanation of variance of factors. At this stage, some factors whose extraction subscription values are less than 0.5 are removed. The reason is that, if the numerical value is less than 0.5, it means that the factor in question has no significant relationship with any of the factors. The calculations in this section go so far that the extracted values are higher than 0/5, which in the present study, the following values have been obtained .

Table 11- Results of Extraction Sharing

Extraction Sharing	**Factors**	**Extraction Sharing**	**Factors**	**Extraction Sharing**	**Factors**
0/807	**23**	**0/822**	**12**	**0/814**	**1**
0/433	**24**	**0/855**	**13**	**0/841**	**2**
0/809	**25**	**0/833**	**14**	**0/441**	**3**

0/821	**26**	**0/922**	**15**	**0/855**	**4**
0/824	**27**	**0/812**	**16**	**0/842**	**5**
0/822	**28**	**0/844**	**17**	**0/890**	**6**
0/813	**29**	**0/832**	**18**	**0/840**	**7**
0/839	**30**	**0/801**	**19**	**0/832**	**8**
0/846	**31**	**0/805**	**20**	**0/834**	**9**
0/803	**32**	**0/456**	**21**	**0/801**	**10**
0/855	**33**	**0/891**	**22**	**0/813**	**11**

Reference: Research findings, 1400

Based on the results obtained, agents whose extraction share is less than 0/5 are eliminated. Criteria affecting the smartening of Nowshahr city with a sustainable approach that is calculated less than 0/5, include factors number 3 (ethnic and social pluralism), 21 (availability of ICT infrastructure) ,and 24 (educational facilities) .

The table of explanation of variance of the third stage includes the factors that should be focused and considered in the smartening of Nowshahr city with a sustainability approach .

In this table, the number of identified factors and the amount of variance explanation for each of them were determined .According to the results of SPSS analysis, it can be stated (Table 12) that two factors have special vectors greater than one, the first factor explains about 44% , the second factor explains about 41% of the variance. On the other hand, the cumulative variance is equal to %85/08. This means that these four factors explain about 80% of the variance of the criteria affecting the smartening of Nowshahr city with a sustainable approach and should be focused on these factors in the smartening of Nowshahr .It is important to note that the cumulative variance rate must be greater than 90%.

Table 12- Explanation table of variance

floors	special values			special values extraction factor with rotation		
	total	variance percentage	cumulative percentage	total	variance percentage	cumulative percentage
1	**7/928**	**44/602**	**44/602**	**3/579**	**44/931**	**44/931**
2	**2/720**	**41/198**	**85/08**	**3/482**	**41/608**	**86/539**

Reference findings, 1400

Rotated matrix of indicators affecting the smartening of Nowshahr city with the stability approach

Rotated matrix is one of the main outputs of exploratory factor analysis. In this matrix, the position of each factor is determined in the desired clusters. In this way, in each row, the largest number of each factor is determined and placed in the category related to it. The criterion of percentage of variance and eigenvalues and Cattell's chart diagram have been used to determine the number of factors and in the most appropriate case for this scale, these criteria have determined two factors that explain more than 80% of the variance. The principal components and of the varimax rotation, the factor structure of the scale were examined. According to the findings of Table 13, with the exception of almost three species, most of the subsets of six indicators in Nowshahr city smartening with a load stability approach achieved a high factor, which shows the importance of these dimensions in urban smartening. Among the six indicators of smartening, "smart governance" with a factor load of 0/853 has gained the highest priority from the point of view of experts and specialists in smartening the city of Nowshahr with a sustainable approach. Then "smart people" with a factor load of 0/847 and "smart environment" with a factor load of 0/836 have the highest importance in terms of average factor load.

Table 13- Rotated matrix of indicators affecting the smartening of Nowshahr city with a sustainable approach

Average Criterion	**Scores (factor load)**	**Index**	**Criterion**	**Dimension**

0/847	**0/814**	Level of skill and competence	smart people	smartening
	0/841	Lifelong learning		
	0/855	Flexibility		
	0/842	Creativity		
	0/890	Enlightening globalization		
	0/840	Participation in social life		
0/827	**0/832**	Entrepreneurial Innovation	smart economy	
	0/834	Spirit Productivity		
	0/801	Trademarks		
	0/813	Effectiveness		
	0/822	Flexibility in Labor Market		
	0/855	Tendency to International		
	0/833	Activity Transferability		
0/853	**0/922**	Participation in decision	Smart governance	
	0/812	making about public and social service		
	0/844	transparent governance		
	0/832	political strategies		
0/832	**0/801**	Local access	smart mobility	

	0/805	National and international access		
	0/891	Safe, creative and environmentally useful transportation systems		
0/816	**0/807**	convenient facilities	Smart Living	
	0/809	health conditions		
	0/821	Tourist attractions		
	0/824	Personal security		
	0/822	Social cohesion		
	0/813	Quality of accommodation		
0/836	**0/839**	Pleasant natural conditions	Smart environment	
	0/846	pollution		
	0/803	environmental protections		
	0/855	sustainable resource management		

Reference findings, 1400

Conclusion

The results of the one-sample t-test show that the status of smart variables in Nowshahr with a sustainability approach is not in a good position and hypothesis H0 (no effect of smart variables in a smart city with a sustainability approach) versus hypothesis H1 (effect of smart variables in the smart city with a sustainability approach). The results of factor analysis have shown that among the six buy of sm, "smart governance" with a factor load of 0/853 has gained the highest priority from experts and specialists in smart Nowshahr with a sustainable approach. Then "smart people" with a factor load of 0/847 and "smart environment" with a factor load of 0/836 have the highest importance in terms of average factor load. Comparison of the results of this research with researches conducted in Iran shows that most of these researches (Ghorbani and Noshad, 1387; Behzadfar, 1382; Kiani, 1390; Sajjadi and Shokri, 1394) have studied the principles, obstacles and necessities of

urban smartening and in none of them has the relationship between cities' smartening and their sustainability been examined. Many believe that smartening is an effective tool for achieving urban sustainability. Therefore, in this study, it was investigated that the results of Pearson correlation coefficient also confirmed the direct relationship between the two concepts (Table 3).

According to what has been said, in order to develop the level of smartening and sustainability in the city of Nowshahr, the following strategies are presented :

- Development of urban smartening strategies by urban management, along with local substantiality indicators (such as energy, land use, environment, etc.)
- Governance in Nowshahr neighborhoods, which have the lowest level of smartness
- Improving smartening indicators in Nowshahr
- Reducing instability in the neighborhoods of Nowshahr
- Improving the level of stability of physical and economic indicators in Nowshahr, which have the lowest stability scores among the indicators .
- Utilizing the experiences of developed countries in smartening and urban sustainability in various physical, economic, social and environmental dimensions.

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