

4-15-2022

## Analyzing and Evaluating the Effect of Implementing the Principles of New Urbanism on Ardabil and Its Peripheral Villages

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### Recommended Citation

Maleki, Lotfollah; Mahmoudi, Ayyoub; Hashemi masoomabad, Reza; and Fathi, Ghasem (2022) "Analyzing and Evaluating the Effect of Implementing the Principles of New Urbanism on Ardabil and Its Peripheral Villages," *Emirates Journal for Engineering Research*: Vol. 27: Iss. 2, Article 1.

Available at: <https://scholarworks.uaeu.ac.ae/ejer/vol27/iss2/1>

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# ANALYZING AND EVALUATING THE EFFECT OF IMPLEMENTING THE PRINCIPLES OF NEW URBANISM ON ARDABIL AND ITS PERIPHERAL VILLAGES

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(Received 23 November 2021 and accepted on 15 April 2022)

## Abstract

New urbanism is a response to prevent the decline and erosion of settlements, attention to local and regional capacity, and return to identity. Villages are in constant contact and interaction with the city, and this interaction is ongoing in all areas. Undoubtedly, rural development is not possible in all social, economic, managerial, and physical dimensions, regardless of the city. The study aims to implement the principles of urbanism in Ardabil based on the performance of surrounding rural settlements in the framework of modern urban planning. Accordingly, a questionnaire was prepared. The components include managerial, physical, socio-cultural, economic, and environmental components. The statistical sample of this research is fifty managers and executives, village heads, professors, and elites of Ardabil city. The most impact on the decision-making system on the management of rural and suburban areas is that the same number of questionnaires have been completed, data analysis in SPSS software and ANP method and using statistical tests T, results. The results show that according to the relative importance coefficient obtained from the ANP method, managerial components (0.0448), socio-cultural components (0.0445), economic components (0.0428), physical components (0.0403), and environmental components (0.0276) respectively have the most to the least impact on the implementation of the principles of urbanism in the city of Ardabil on the surrounding villages.

**Keywords:** new urbanism; rural performance; rural management; SPSS, ANP

## 1. INTRODUCTION

Over the last few decades, with the increasing growth of urbanization and the formation of new scales of urban growth, the city, and contemporary urban planning have faced new challenges. Comprehensiveness and attention to different dimensions and aspects of the problem to solve it sustainably, due to the breadth of dimensions and changes like urban problems and the complexity of these problems, has made them inevitable [1]. The rapid growth of cities as well as the inefficiency of macro-axis development programs lead to disruption of social and biological balance and stability and create spatial inequality in some areas [2]. The basic principles of urbanism in relation to all the studied sectors include pedestrianism, and connection, creating different types of housing, paying attention to the identity, environment, and history of the region, creating

mixed activity uses, vertical growth, and creating density in the tissue, attention to valuable contexts in design and planning, maintaining and strengthening traditional structures, using resident participation, strengthening public and green transportation, maintaining and strengthening public and green open spaces, creating and managing bus stops, using design tools to It is an increase in security [3]. The implementation of any project in a part of the city affects the whole city and in some cases the settlements around the city. The implementation of the principles of new urbanism in the managerial, socio-cultural, physical, economic, and environmental sectors also affects the villages around the city. New urbanism management in the framework of the intellectual foundations of urbanism is performed by considering the suburbs and villages around the city [4], urbanization pays much attention to the growth of economic

indicators of the city because the growth of economic indicators on the suburbs and The villages around the city also have many effects [5]. Social, cultural and identity in the city and the institutionalization of the populist decision-making system are among the principles of new urbanism and even go beyond this field and invite suburban groups and villages around the city to consult on the development of the city and suburbs [6]. So far, no comprehensive research has been done on the impact of implementing the principles of urbanism in the city and its impact on the surrounding villages, so it can be claimed that this research can be a new method in this field. Numerous researches and researches have been done inside and outside Iran. Shams al-Dini et al. (2011) have dealt with the role of managerial changes in the city and suburbs and social components in the form of new urbanism policies on the surrounding villages. Safaeipour et al. (2015) have emphasized the impact of implementing the principles of urbanism in the form of modern urban planning on the surrounding villages. Carles C. To and Mark J. Apple (1999) in a study evaluated the impact of urban development on the suburbs and surrounding settlements. Luplo et al. (2016) in a study on the development strategy of suburbs and villages around the city based on sustainability and the principles of urbanism. The developing country of Iran has always strived to achieve sustainable cities in line with the world based on the ideological foundations of the urbanism movement. Therefore, it can be said that the city is always associated with the suburbs and villages so any implementation of novel urban planning principles has a direct impact on the suburbs.

In recent decades, the city of Ardabil has experienced unprecedented and rapid growth both in terms of population and size. According to studies, the population of this city has increased from 65,742 people in 1956 to 529,374 people in 2016 and its area has reached an area of more than 6,200 hectares [7]. In fact, in 60 years, in addition to the great change in the appearance of the city, its population has also increased 8 times. Now, the fundamental question arises in the public mind what effect the implementation of the principles of new urbanism has had on the functioning of the city of Ardabil and the peripheral villages. This study was conducted to study the effect of implementing the principles of new urbanism

on the performance of Ardabil city and peripheral villages according to the managerial, physical, socio-cultural, economic, and environmental dimensions.

### **1.1. Background and theoretical foundations**

New urbanism prism as a valuable document describes the theoretical content of the new urbanism movement. A 1996 document in the United States that evaluates all levels of human community interaction, from blocks, streets and buildings, neighborhoods, districts, and urban areas to metropolitan areas, metropolitan areas, and urban and rural areas. Elites such as Peter Keltorp, Andre Davani, Elizabeth Moll, Elizabeth Plotter Zieberk, Stephanos Poli Guides, and Danielsolomon are the six main founders of this prism. The most important principles of this prism are the recreation of urban centers, the systematic formation of suburbs and surroundings, the preservation of environmental assets, the protection of man-made heritage, attention to historical patterns, and pedestrianism. New urbanism prism is also considered an extension of the theory of sustainable development [3, 8]. New urbanism builders propose three models (development of geocentric neighborhoods and suburbs, development of neighborhoods and suburbs, rural-urban development (same source)) for organizing and developing the city and its surroundings. The principles and policies of new urbanism in the context of the city and peripheral villages include the following:

**Managerial:** New rural management approach, systemic process of rural projects, participation.

**Physical:** creating tourism routes and corridors in villages, designing or strengthening the index symbol and rural identity creation, enhancing roads and passages, localization and enhancement of rural housing, preventing the horizontal growth and development of villages, and vertical development to preserve the rural environment, increasing service uses, lighting, rural sewage system [9].

**Socio-cultural:** mental image and indigenous solidarity of villagers, determining the ethnic-cultural edges of the village environment, the participation of villagers in all aspects of the village, creating or strengthening a sense of belonging, readability, and creating social capital [10].

**Economic:** Establishment of the activity system, policies to support the products of villagers, create sustainable employment, planning, and systematization of rural economic relations with the surrounding city, strengthening the market for goods and services of villagers in sales centers and services to residents of the surrounding city, rural tourism, rural ecotourism planning [11].

**Environmental:** development of green transportation in connection with the village, the connection of open space suburbs and their recreational planning with the village, attention to health, rural and suburban landscaping, development of vegetation and green space, preservation of nature and rural environment [12].

The multiplicity of academic and executive studies and research in the field of urban new urbanism shows the importance of the issue.

McCann (2020) evaluated the principles of urbanization in an article entitled new urbanism. Based on the data in this article, new urban dwellers are discussing and seeking to build an urban form using one of the fundamental terms of the "human scale" movement, with an emphasis on the ability to walk, accessible public space, diverse neighborhoods in terms of social and economic and sustainability. Many geographers and others who have considered these goals in the broader social context, or who have attempted to evaluate their results empirically, are somewhat skeptical of their ease, while these goals themselves seem relatively comfortable [13].

Iravani and Rao (2019) have evaluated the effects of 10 new principles of urbanization on public health in an article entitled "The Impact of New Urbanism on Public Health". According to the results obtained from the statistical analysis approach, the use of public transportation increases physical activity reduces pollution, and street safety and complete community planning should be based on income, age, and ideas for better access [14].

Stanislav and Chin (2019), in an article entitled "Assessing the Viability and Perceived Values of Sustainable Neighborhood Design: New Urbanization and the Main Urban Suburb," evaluate two areas in St. Louis, USA. A new urban development and a major suburb that both have demographic, physical, and aesthetic features are comparable. The similarity in the response of each shows valued

design features, regardless of how and when each is established on the study sites. In this case, the elements of sustainable design of the neighborhood in the suburbs of the trolley are similarly perceived in the neo-urban society and translated from the main method of building suburban cities to the modern era [15].

Lucka (2018), in a study entitled "How to build a local community; new urbanism and its critiques" analyzes the potential benefits of new urbanism and its important arguments and evaluates the general principles of this new approach to urbanization, such as its social doctrine and the concept of the neighborhood [16].

Lan Xu (2017), in a study entitled "Does new urbanization change the pattern of suburban development? A case study of the Toronto area" evaluates the new pattern of suburban development under the influence of the new urbanism movement. The results of the new pattern created in suburban development [17].

Husnah et al. (2014) in a study entitled "effect of executive policies in the city on the surrounding areas and villages" have introduced and approved the two principles of empowerment of local governments in these settlements and sustainable development based on attention to the ecology of these settlements, new urbanism is the cause of local development of these settlements [18].

Boehl (2000) in an article entitled "new urbanism and the city; applications and potential consequences of troubled inner-city neighborhoods" evaluates the potential uses and consequences of new urbanism in troubled inner-city neighborhoods and evaluates the claims and criticisms of new urbanism. According to the results, new urbanization should be considered as a strategy to be integrated into a wider range of economic and social development programs that seek to revitalize and improve the quality of life in inner-city neighborhoods [19].

## 2. MATERIALS AND METHODS

In terms of collecting data, this study is descriptive-analytical research and it is a survey in terms of using a questionnaire, aimed at explaining the subject and its application in the functioning of the city and its surroundings. In this research, the data collection tool is a

researcher-made questionnaire. For this, a questionnaire with five-point questions (Likert scale) was prepared by the researcher, after conducting theoretical studies and compiling the literature and research background. The measured components in the research problem statement section, extracted from the background and theoretical foundations in the questionnaire, were considered by considering each of the criteria of the components and each questionnaire question. Twenty-two people, including managers and executives, 17 village heads, and 11 professors and expert elites received the questionnaire. A total of 50 people were selected to reach the quorum required to use statistical tests. In this research, the collected data have been analyzed in two parts: descriptive statistics and inferential statistics using SPSS software. The validity of the questionnaire has been confirmed by research experts. Cronbach's alpha coefficient (0.8) was

obtained for the questionnaire questions, which shows that the reliability coefficient is acceptable. The relative importance of each component has also been discussed using the ANP network analysis method. One of the innovations in the present study is that this issue is studied for the first time in Iran a similar study in terms of the impact of the principles of urbanism on the city and surrounding villages has not been done so far and also for the city of Ardabil Such issues have not been addressed and in this study, complete and comprehensive components have been collected. The components studied to discuss the effects of the implementation of the principles of urbanism in Ardabil and its effects on the surrounding villages using interviews with experts, theoretical foundations, and backgrounds in the study of its effective factors are presented in Table 1:

**Table 1.** Research Variables

Component	Criterion	Reference
Managerial	<ul style="list-style-type: none"> <li>-New rural management approach;</li> <li>- Participatory approach of villagers in rural management;</li> <li>- Communication with the management system of the surrounding city;</li> <li>-Attraction and use of indigenous elites in rural management;</li> <li>-Paying attention to the planning of all social, economic, physical and environmental elements, ecotourism, etc. in rural management;</li> <li>Awareness of rural management system.</li> </ul>	Subramanian, (1988) and Rezvani, (2002)
Physical	<ul style="list-style-type: none"> <li>- Vertical growth of rural texture in order to prevent environmental effects and better rural management;</li> <li>-Improvement and strengthening of rural housing;</li> <li>-Localization of rural housing:</li> <li>-Planning rural centers and creating public space as centers of social, economic and cultural relations (hangout spaces);</li> <li>- Establishment of mixed uses and needs of residents in the rural center:</li> <li>-Design of the village center with the approach of confinement, proportion and scale;</li> <li>- Creating an element of cultural identity of the village;</li> <li>-Improvement of rural roads and passages;</li> <li>-Creating a tourist pedestrian path inside the village that reaches the identity-cultural or historical index or rural sign;</li> <li>-Design in harmony with identity and climate;</li> <li>-Design of rural sewage system;</li> <li>-Proper lighting of space and rural environment;</li> </ul>	Duany,(2003) and Lehrer, (2004)
Sociocultural	<ul style="list-style-type: none"> <li>-Participation of villagers;</li> <li>-Create readability;</li> <li>-Create a sense of belonging;</li> <li>-Strengthening indigenous solidarity;</li> <li>- Formation of mental image of villagers;</li> <li>Determining cultural edges in rural areas;</li> <li>-Creating social capital:</li> </ul>	Duany, (2000)

	- Using the opinions of the villagers in all stages of the process of preparing and implementing the plan through interviews, questionnaires and ...	
Economic	-Strengthening the market for providing goods and services to the villagers in sales centers and services to the residents of the surrounding city; Establishment of a planned activity system commensurate with the population in the villages; - Policies to support the products of the villagers; -Creating industrial, indigenous and tourism employment in rural areas to maintain the rural population; -Planning and systematization of rural economic communication system with the surrounding city; - Attention to rural tourism; Holding rural tourism start-ups; Rural ecotourism planning.	Rizov , (2005)
Environmental	-Preservation of nature and rural environment; - The connection of open space in the suburbs and their recreational planning with the village; -Development of green transportation in connection with the village; - Prevention of water and air pollution; -Development of vegetation and green space; -Suitable landscaping; -Reducing energy consumption; - Rural space health.	Davies, (2011)

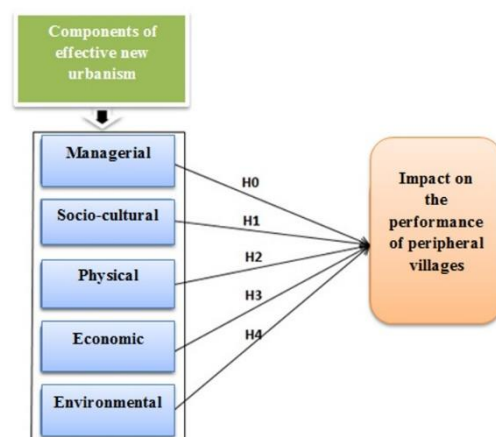
To measure the validity and reliability of the study, Cronbach's alpha coefficient was used to calculate the reliability coefficient. According to the results of Table (2), the Cronbach's alpha coefficient for all variables is higher than 0.7, which indicates the high reliability of the research questions.

**Table 2.** Calculation of Cronbach's alpha coefficient

Components	Cronbach's alpha coefficients
Managerial	0.834
Physical	0.819
Sociocultural	0.825
Economic	0.816
Environmental	0.838

By studying other sources, the researcher has categorized the components to achieve the research objectives, which include: managerial, socio-cultural, physical, economic, and environmental variables. Thus, with the following conceptual model (Figure 1), the effectiveness of these components and its sub-components has been investigated following the hypotheses and objectives of the research.

According to Figure 1, managerial, socio-cultural, physical, economic, and environmental components can be considered as components need to be studied for the conceptual model. In fact, performance of the peripheral villages can be a function of managerial, socio-cultural, physical, economic, and environmental components as independent variables.



**Figure 1.** Conceptual model of research (by [10])

## 2.1. The geographical scope of research

The city of Ardabil has been located in the middle of a plain of the same name at an altitude of 1500 meters above sea level and among the mountains of

Talesh and Sabalan mountains in the northwest of the Iranian plateaus and has cold winters and mild summers. In 2016, the population of this city was 529,374 people (in 158,627 households) based on the general population and housing census. Ardabil is located among a plain with a similar name at an altitude of 1500 meters above sea level and among the Talesh and Sabalan mountains in the northwest of the Iranian plateau and has cold winters and mild summers. According to the 2016 Population and Housing Census, the population of the city was 529,374 (out of 158,627 households). Ardabil has ten rural districts and 93 villages. In this study, 10 important villages close to Ardabil have been selected as an example. Araloo village (located in the rural district of Foolad-e-Hir) with a population of 3261 people - Sham Asbi village (located in the rural district of Balghloo) with a

population of 2148 people, - Soltanabad village (located in the rural district of Kalkhoran) with a population of 1752 people - Anzab village (located in the rural district of Kalkhoran) with a population of 1581 people-Sumeeh village (located in the rural district of Kalkhoran) with a population of 1368-Amouqin village (located in the rural district of Sardabeh) with a population of 1318 people-Hamlabad village (located in the rural district of Sardabeh) with a population of 1041 people - Andarab village (located in the rural district of Sardabeh) with a population of 889 people -Gilande village (located in the rural district of Kalkhoran) with a population of 877 people -Banfsheh Daragh village (located in the rural district of Balghlu) with a population of 339 people. Figure 2 shows the location of the studied villages and the city of Ardabil.

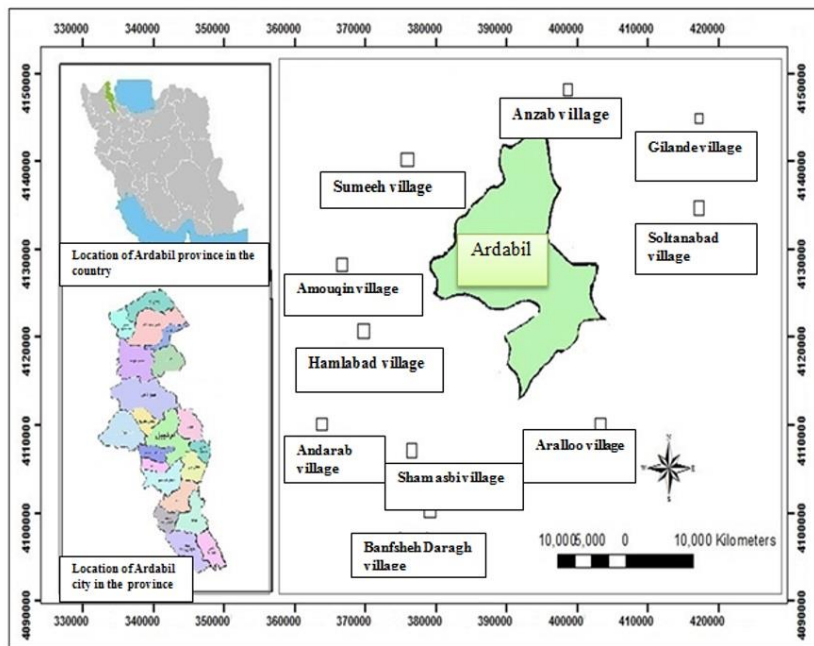


Figure 2. Location of Ardabil city and peripheral villages

### 3. Results and Discussion

#### 3.1. Descriptive statistics of the studied variables

As Table 3, the score obtained by the respondents in relation to the variables of managerial component (4.5), Physical component (4.2), socio-cultural component (4.34), and economic component (4.15) is in the significant level and in the category of the economic component its average is equal to 2.87.

Table 3. Descriptive index of research variables (n = 50)

Components	Mean components	Standard deviation	Minimum score	Maximum score
Management component	4/5	0/34	15	20

Physical component	4/2	0/37	52	73
Socio-cultural component	4/34	0/50	17	25
Economic component	4/15	0/65	15	25
Environmental component	2/87	1/002	4	20

### 3.2. Inferential analysis

As in Table 4, the significant level for all research variables was more than 0.05, which indicates the normality of the research variables, and the low z-Kolmogorov-Smirnov z value also indicates a normal distribution. Therefore, it is possible to use some parametric statistics to check the accuracy of the hypotheses.

### 3.3. Testing hypotheses

**Main Hypothesis:** The components of implementing the principles of new urbanism in Ardabil have an effect on peripheral villages.

Table 5 shows that the highest mean is related to the managerial component (4.5) and the lowest mean is related to the environmental component (2.87). The results also show that the value of the t-statistic is significant for the studied variable at the confidence level of 0.95. Therefore, it can be said that all variables except the managerial component among the studied managers have a higher average than the conceptual average. So, the research hypothesis is confirmed and it can be said with 95% confidence that the components of implementing the principles of new urbanism in Ardabil have an effect on peripheral villages.

Table 4. Kolmogorov-Smirnov test (check for normality of data)

Variables	number of samples	Z value	significant level
Management component	50	1/449	0/080
Physical component	50	0/708	0/697
Socio-cultural component	50	0/703	0/706
Economic component	50	0/867	0/440
Environmental component	50	0/950	0/327

Table 5. The role of implementing the principles of new urbanism in Ardabil on peripheral villages

Row	Components	Mean	Standard deviation	T	Sig
1	Management component	4/5	15/12	78/333	0/000
2	Physical component	4/2	60/14	74/889	0/000
3	Socio-cultural component	4/34	18/71	27/736	0/000
4	Economic component	4/15	17/77	22/857	0/000
5	Environmental component	2/87	8/54	15/054	0/000

\* Conceptual mean or midpoint of the questionnaire spectrum (3)



Hypothesis 1: The managerial component of implementing the principles of new urbanism in Ardabil has an effect on peripheral villages.

According to Table 6 maximum mean is related to the component of the role of modern rural management approach on the performance of peripheral villages (4.86) and the minimum mean is related to the component of the role of the approach of paying attention to the planning of all elements of

identity, natural, physical, etc. on the performance of the peripheral villages (3.96). The results also show that the value of the t-statistic is significant for the variables at the confidence level of 0.95. Therefore, it can be said that the managerial components of the implementation of the principles of new urbanism in the city of Ardabil affect peripheral villages, as a result of which the hypothesis is confirmed.

**Table 6.** Management components of implementing the principles of new urbanism in Ardabil city on peripheral villages

Row	Components	Mean	Standard deviation	T	Sig
1	The role of modern rural management approach on the performance of peripheral villages	4/86	1/86	0/000	0/000
2	The role of the approach of attracting and using indigenous elites on the performance of peripheral villages	4/46	1/46	0/000	0/000
3	The Role of Attention to Planning All Elements of Identity, Natural, Physical, etc. on the Performance of Peripheral villages	3/96	0/96	0/000	0/000
4	The role of rural management system intelligence approach on the performance of peripheral villages	4/84	1/84	0/000	0/000

\* Conceptual mean or midpoint of the questionnaire spectrum (3)

Hypothesis 2: Physical component of implementing the principles of new urbanism in Ardabil has an effect on peripheral villages.

According to Table 7, the average of all components is higher than the conceptual average and the maximum mean is related to the component of the role of rural road enhancement on the performance of peripheral villages (4.82) and the minimum mean is related to the component of the role of rural

sewage system design on the performance of peripheral villages (3.20). The results also indicate that the value of the t-statistic is significant for all components at a confidence level of 0.95. Therefore, the hypothesis has been accepted and it can be said that the physical components of the implementation of the principles of new urbanism in Ardabil have an effect on peripheral villages. As a result, the hypothesis is confirmed.

**Table 7.** Physical components of implementing the principles of new urbanism in Ardabil city on peripheral villages

Row	Components	Mean	Standard deviation	T	Sig
1	The role of vertical growth of rural tissue in order to prevent environmental effects and better rural management on the performance of peripheral villages	3/5	0/500	3/182	0/003
2	The role of rural housing enhancement and status on the performance of peripheral villages	4/52	1/52	15/206	0/000
3	The role of localization of rural housing on the performance of peripheral villages	4/26	1/26	12/322	0/000
4	The role of planning rural centers and creating public space as centers of social, economic	4/56	1/56	17/130	0/000

Row	Components	Mean	Standard deviation	T	Sig
	and cultural relations (hangout spaces) on the performance of peripheral villages				
5	The role of establishing mixed uses and the needs of residents in the rural center on the performance of peripheral villages	4/76	1/76	22/404	0/000
6	The role of village center design with the approach of confinement, fit and scale on the performance of peripheral villages	4/48	1/48	15/451	0/000
7	The role of creating an indicator element and cultural sign of village identity on the performance of peripheral villages	4/7	1/700	22/098	0/000
8	The role of rural road enhancement on the performance of peripheral villages	4/82	1/82	29/414	0/000
9	The role of creating a tourist pedestrian path inside the village that reaches the identity-cultural or historical index or rural sign on the performance of peripheral villages	4/600	1/600	18/667	0/000
10	The role of identity and climate design on the performance of peripheral villages	3/56	0/56	4/599	0/000
11	The role of rural sewage system design on the performance of peripheral villages	3/200	0/200	1/492	0/142
12	The role of proper lighting of space and rural environment on the performance of peripheral villages	3/300	0/300	1/655	0/104
13	The role of rural environment design based on indigenous identity on the performance of peripheral villages	3/74	0/740	5/678	0/000
14	The role of creating and designing health and exercise pathways on the performance of peripheral villages	4/46	1/46	17/834	0/000
15	The role of restoration of ancient and historical sites on the performance of peripheral villages	4/68	1/68	25/210	0/000

\* Conceptual mean or midpoint of the questionnaire spectrum (3)

Hypothesis 4: The socio-cultural component of implementing the principles of new urbanism in Ardabil has an effect on peripheral villages. According to Table 8, it can be said that the maximum mean is related to the component of the role of strengthening indigenous solidarity and participation and using theories of villagers in development projects on the performance of peripheral villages (4.71) and the minimum mean is related to the component of the role of creating a

sense of belonging to the function of peripheral villages (3.78). The results also show that the value of the t-statistic is significant for all components at a confidence level of 0.95. Therefore, it can be said that the socio-cultural components of the implementation of the principles of new urbanism in the city of Ardabil have an impact on peripheral villages. Therefore, the research hypothesis is confirmed.

**Table 8.** Socio-cultural components of implementing the principles of new urbanism in Ardabil city on peripheral villages

Row	Components	Mean	Standard deviation	T	Sig
1	The role of strengthening indigenous solidarity and participation and application of villagers' theories in development projects on the performance of peripheral villages	4/7134	1/71429	13/682	0/000

Row	Components	Mean	Standard deviation	T	Sig
2	The role of mental image formation and environmental readability on the function of peripheral villages	4/500	1/500	8/629	0/000
3	The role of social capital creation on the performance of peripheral villages	4/1429	1/14286	4/505	0/001
4	The role of creating a sense of belonging on the function of peripheral villages	3/7857	0/78571	2/797	0/015
5	The role of determining cultural edges in the rural environment on the performance of peripheral villages	4/5714	1/57143	6/904	0/000

\* Conceptual mean or midpoint of the questionnaire spectrum (3)

Hypothesis 5: The economic component of implementing the principles of new urbanism in Ardabil has an effect on peripheral villages.

According to Table 9 the maximum mean related to the component of the role of establishing a planned activity system tailored to the population on the performance of peripheral villages (4.55) and the minimum mean is related to the component of the role of rural production protection policies on the

performance of peripheral villages (3.66). The results also show that the value of the t-statistic is significant for all components at a confidence level of 0.95. Therefore, the hypothesis has been confirmed and it can be said with 95% confidence that the economic components of implementing the principles of new urbanism in Ardabil have an impact on the peripheral villages. As a result, the hypothesis is confirmed.

**Table 9.** Economic components of implementing the principles of new urbanism in Ardabil city on peripheral villages

Row	Components	Mean	Standard deviation	T	Sig
1	The role of population-based planned activity system on the performance of peripheral villages	4/5556	1/55556	7714	0/000
2	The role of policies to support rural production on the performance of peripheral villages	3/6667	0/6667	2/380	0/029
3	The role of planning and systematization of rural economic communication system with the surrounding city on the performance of peripheral villages	4/000	1/000	4/373	0/000
4	The role of strengthening the market for providing goods and services to villagers in sales centers and services to surrounding city residents on the performance of peripheral villages	4/0556	1/05556	4/242	0/001
5	The role of tourism industry planning and rural ecotourism on the performance of peripheral villages	4/500	1/5000	7/422	0/000

\* Conceptual mean or midpoint of the questionnaire spectrum (3)

Hypothesis 6: The environmental component of implementing the principles of new urbanism in Ardabil affects peripheral villages.

According to Table 10, the maximum is related to the role of nature conservation, vegetation development, and rural environment planning

(green transport development, etc.) on the performance of peripheral villages (4.20) and the minimum mean is related to the component of the role of rural spatial and environmental health on the performance of peripheral villages (3.28). The results also indicate that the value

of the t-statistic is significant for the components at the confidence level of 0.95. Therefore, it can be said that the environmental components of the implementation of the

principles of new urbanism in the city of Ardabil have an impact on peripheral villages. As a result, the hypothesis is confirmed.

**Table 10.** Environmental components of implementing the principles of new urbanism in Ardabil city on peripheral villages

Row	Components	Mean	Standard deviation	T	Sig
1	The role of nature conservation, vegetation development and rural environment planning (development of green transportation, etc.) on the performance of peripheral villages	4/200	1/200	9/899	0/000
2	The role of preventing water and air pollution on the performance of peripheral villages	3/54	0/54	3/280	0/002
3	The role of proper landscaping on the performance of peripheral villages	3/88	0/88	6/355	0/000
4	The role of reducing energy consumption on the performance of peripheral villages	3/74	0/74	4/390	0/000
5	The role of rural spatial and environmental health on the performance of peripheral villages	3/28	0/28	1/788	0/040

\* Conceptual mean or midpoint of the questionnaire spectrum (3)

#### 3.4. ANP Network Analysis Process

At this stage and in the framework of the ANP model, the factors extracted from their factor analysis are analysed using the ANP model to calculate their relative importance. After calculating the elements of Super Matrix of

them in super matrix of alternatives to make super matrix is achieved super matrix obtained tuneable and collection of columns equal to 1, so it can also bring to rate the relative importance index Obtain components. The significance coefficient of the components is in Table (11).

**Table 11.** Relative importance coefficient of effective components in implementing the principles of new urbanism in the villages of Ardabil city using ANP model

Order	Component	Coefficient
1	Managerial	0.0448
2	Physical	0.0403
3	Sociocultural	0.0445
4	Economic	0.0428
5	Environmental	0.0276

The relative importance coefficient of each component by ANP method in relation to the variables of managerial component (0.0448), physical component (0.0403), socio-cultural component (0.0445), economic component (0.0428) is in the desired level and in the next category of biological component The

environment is with an average of 0.0276. And with 95% of confidence, it can be claimed that among the components respectively (managerial, socio-cultural, economic, physical, environmental components) in the implementation of the principles of new urbanism in the city of Ardabil has an impact on the surrounding villages.

#### 4. Conclusion

Findings in each of the studied dimensions result in the following:

In this study, from the perspective of managers and officials, village heads, professors and specialized elites, the managerial components of implementing the principles of new urbanism in Ardabil city affect the surrounding villages. Surrounding the city, attracting and using indigenous elites in rural management, paying attention to planning all social, economic, physical and environmental elements, ecotourism, etc. in rural management and smartening the rural management system, as among other components. The new rural management approach has the highest level of desirability. Components of implementing the principles of new urbanism in the city of Ardabil also affect the surrounding villages. The results of this study can meet the following: 1- Development of facilitation offices in informal areas and settlements; 2- Increasing the quality of life in Informal settlements; 3. Increasing the level of social functional efficiency in informal settlements; Finally, it can be concluded that from the perspective of managers and officials, village heads and professors and expert elites, all components of the implementation of the principles of urbanism in the city of Ardabil affect the surrounding villages, so these variables are the basic pillars of new urbanism. In this article, using this new method, the implementation of the principles of urbanism on the performance of rural settlements around the city of Ardabil was ranked. Using this method, the relative importance of these components was determined, the most effective of which was the managerial component, followed by the socio-cultural component and economic, physical and environmental components, respectively.

The following suggestions are made according to the components and variables measured by the research and according to the objectives and proof of the research hypotheses in the research topic:

In the managerial component, the peripheral villages can be affected by the following cases, 1- Holding regular meetings with rural elites in the field of rural planning, 2- Using local capacity and rural manpower for rural enhancement, 3- Continuous communication with the surrounding city management and regular participation in meetings in the field of

coordination with projects Urban, 4- Establishment of ICT offices and technology centers in the village, 5- Presenting proposals in the field of the indigenous, economic and social power of the village upstream to include it in upstream projects and rural development, 6- Holding regular meetings and Workshops with villagers to raise awareness, educate citizens and use their ideas in village management.

In the physical component, the peripheral villages can be affected by the following cases, 1- increasingly limiting the scope of rural development and planning for the vertical development of rural housing; 2-Permanent enhancement and regeneration of rural housing with the approach of using local capacity and the private and public sectors; 3- Development or creation of public spaces with a design and professional approach in the village; 4- Creating mixed uses in the environment and the center of the village with the approach of cultural and local programs and empowering the residents; 5- Strengthening and reconstructing the Physical Index element in the village; 6- Designing a pedestrian path in the village with a cultural approach of identity and attractiveness; 7- Paying attention to planning and design in rural environment in all dimensions with the ecological approach and local identity of the village; 8- Paying attention to the lighting of the rural element, passages and public spaces in the village.

In the socio-cultural component, the peripheral villages can be affected by the following cases, 1- the central program of rural management and planning using social capital in all aspects of development in the village; 2- Holding ceremonies and festivals to stimulate the national and indigenous sweat of the people; 3- Paying attention to the legibility of the rural environment in terms of culture and indigenous identity; 4- Presenting a design-oriented approach to strengthen the sense of belonging and reconstruct the mental image of residents and tourists from the rural environment; 5- Designing and strengthening cultural edges in the village and presenting it to residents and tourists.

In the economic component, the peripheral villages can be affected by the following cases, 1- prioritize the productive economy and rural income generation and plan to present it in the surrounding city; 2- Creating a system of production-oriented, touristic, and mixed activities to increase the sustainable income of

citizens; 3- Planning the economic connection of each village in proportion to the production capacity, tourism, etc. with the city; 4- Holding festivals and regular technological market markets in the village and using the media capacity to introduce it; 5- Paying attention to the eco-tourism economy in the villages and planning to support the private sector and the ability of the residents to create it.

In the Environmental component: 1- manage human and animal waste in the village with the approach of preserving the rural ecosystem and tourism; 2- Make the communication route between the village and the city attractive, creating physical and attractive elements, designing the entrance, etc., to attract tourists to the village; 3- Rural surface and groundwater management; 4. Protection of the natural environment and rural ecosystem by the participation of residents and rules and regulations, 5. Development of green space designed in the village to attract tourists with the approach of using the natural capacity of the village and its protection.

It is also suggested that for future research in the field of the subject under study, the components be measured and examined one by one and in more detail, using different methods and the results are measured with the existing facts.

#### Data availability

Some or all data, models, or codes that support the findings of this study are available from the corresponding author upon reasonable request.

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