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Spatial Analysis and Ranking of Towns of Khuzestan Province In Terms of Development of ICT Indicators Using TOPSIS and AHP Techniques

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ABSTRACT: Planning with the aim of development and reduction of regional inequality is one of the important issues in the developing countries. Knowledge and analysis of the conditions of areas in different respects is the first step in the process of regional planning. Today, overcoming time and place restrictions, information and communications technologies (ICT), as the axis of and the key to sustainable development and the most important criterion of development, has changed the appearance of the world and the lifestyles, and is indeed both the cause and the effect of development. Accordingly, this study attempted to assess the degree of enjoyment of ICT indicators in the towns of the province of Isfahan using a descriptive-analytical method. The towns were investigated on the basis of 23 ICT indicators, by using quantitative models of planning such as the Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS), cluster analysis, weight assessment of indicators using AHP, and ranking and stratification of inequality in the towns. Result show lack of balance and harmony among the towns in terms of enjoyment of ICT indicators, such that the city of Ahvaz (with a point of 0.8793) rank first and the town of Haftkel (with a point of 0.0423) rank last. Results of cluster analysis reveal that most of the towns of the province are underprivileged. Results also demonstrate a direct relationship between the size of the population of the towns and their enjoyment of ICT indicators.
Keywords: Development, Information and Communications Technology, TOPSIS, AHP , Khuzestan

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INTRODUCTION

In the development planning process, identification and explanation of development levels of regions and knowledge of their weak and strong points is very important, because achievement of sustainable development requires balanced distribution of service, economic, culture, planning, etc. indicators (Fanni, 2004). Existence of economic, social, technological, and cultural duality in the development and change in the society is one of the main themes in the new literature on development. This problem of development requires attention more than before (Sayeh Miri, 2001). As imbalance of spatial variance of development indicators is increased, it exponentially increases the spatial imbalance of the facilities and population, and, besides increasing the concentration of indicators in areas currently suffering the problem of concentration, it also expels the population and facilities from underprivileged areas and intensifies the Gordian knots of spatial imbalance (Muhammadi and Izadi, 2012). As a result of these policies, a small number of regions play a key role and other regions have subsidiary roles (Mo'meni and Saber, 2010). The contemporary world, rightly termed the era of information and digital world, has experienced substantial progress in information and communications technologies. ICT has permeated quickly into the different strata of societies, and, having provided special facilities and opportunities, has served as a facilitator to lay the foundation for substantial change and transformation in different fields, and has paved the way for the development of societies (Pirannejad et al. 2013). Having become one of the fundamental bases of modern societies in a very short time (Patru, 2002), ICT, as a new technology, play a significant role in the development of societies (Moni'i et al. 2009) such that it has practically overwhelmed and influenced all aspects of people's lives and has become an integral part of the aspects of development of countries (Rasoulinejad and Noori, 2010) and hence, it is considered as the basis of development (Zangi Abadi and Ali Husseini, 2009) and the most important axis of change and development in the world (Jalali, 2004).

However, growth of ICT has been accompanied by a new kind of gap, known as the digital divide, between different groups of people. Due to the fast extension of the Internet across the world, countries are subject to the threat that, if they fail to identify the digital divide within their country or that between their country and other countries, they fall behind the trend. Besides, the digital divide has the potential to increase and broaden the gap and distance between regions and countries (international digital divide) or between groups of domestic citizens of societies (domestic digital divide) (Hanafi Zadeh et al. 2009). Given the fact that ICT plays a fundamental and basic role in the development, progress and enhancement of people's life in the current and future societies (Varesi et al. 2009), this digital divide leads to imbalanced and unequal development of regions.

Hence, investigating the condition of ICT and the digital divide between the countries geographical areas, drafting appropriate policies for balanced and fair distribution of ICT services and facilities, and attempting to eliminate or at least reduce the digital divide must be one of the important priorities of ICT development in the

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country and must be placed at the top of current regional planning.

The main objective of this study was to determine the degree of development and the degree of difference and inequality among the towns of Khuzestan Province in terms of ICT indicators, and to cluster the towns in order to offer a picture of their condition as well as the lack of the aforementioned indicators among these towns. Accordingly, the towns of this province were classified into three clusters.

Review of literature

Extensive research has so far been done on ICT and its impacts on various aspects of life. However, scant attention has been paid to the development of different regions based on ICT indicators, and to the investigation of the digital divide. The following are examples of the studies done in this area.

As a case study, Hanifi et al. (2007) investigated the digital divide in Iranian electronic cities, ascertaining that there are differences and gaps among various provinces and cities in the country (macro level) and among different regions of the country (micro level). Zangi Abadi and Ali Husseini (2009) carried out a spatial analysis of ICT in various countries and demonstrated that the global distribution of the use of the Internet and personal computers is not normal, and the highest percentage of it belongs to a few South American, European and Australian countries. Analyzing the digital divide among 57 state members of Organization of Islamic Conference, Noori (2010) concluded that only a small number of the countries have been able to reduce their distance from the developed countries in terms of digital development indicators, and the majority of Muslim countries are in bad conditions in this regard. In this respect, Iran ranks 105 in the world, 22 among Muslim countries and 11 in the Middle East. Shahivandi et al. (2011) evaluated the spatial distribution of ICT indicators in the 14 distrcins of Isfahan Municipality. They found out that the municipalities of different districts are not equal in terms of enjoyment of the aforementioned indicators, and there is great contrast in the type and method of distribution of these indicators. Azani et al. (2012) studied and compared ICT indicators in the towns of the province of Isfahan, concluding that there is a digital divide among these towns and the more populated towns have a better condition in this respect.

Theoretical framework

ICT and its role in development

Over centuries, the paradigms for achieving development have experienced drastic changes (Lashkar Bolouki and Ahmadi, 2007). Information technology is a new paradigm deemed the greatest technological revolution aster the Industrial Revolution (Taghvaei and Akbari, 2010). Over recent years, this technology has influences different aspects of human life, such that it is almost unlikely to find a part of human life not enjoying (directly or indirectly) this technology. Besides, over the last decade, a considerable part of growth and development of countries, especially underdeveloped countries, has been achieved undoubtedly with the help of this technology and opportunities it has created (Moradhassel and Mozayani, 2013).

Today, one of the standards of development of countries offered by international organization and world economy is their achievement and use of ICT (Shahivandi et al. 2011), and geographical units and regions are classified on the basis of this standard. Therefore, appropriate development of ICT can serve as a key to the integrated development of the country, and, by conducting macro planning for this industry in the country and continuously attempting to implement and reform these plans, we can follow the path of development (Azani et al., 2012).

The concept of digital divide

There great difference and inequality among the developing countries in terms of the use and enjoyment of ICT (Postnote, 2002). One of the factors yielding this inequality in the current age is the digital divide, which is itself both the cause and the effect of various economic and social gaps (Noori, 2010). During the past 10 years, this term has had extensive use in expressing widespread changes in accessibility of ICT across the world. The digital divide is a complicate concept and has dimensions and aspects which may overlap one another (Vicente and Lopez, 2011). The digital gaps indicates the distance between countries, people, organizations, regions and geographical zones with different socio-economical levels, considering their opportunities for having access to ICT and their ability to use the Internet for a great variety of activities (Ya'ghoubi and Shakeri, 2008). This concept is characterized by insufficient infrastructure, high accessibility costs, weak or inappropriate strategies, inefficiency in provision of services and telecom-munication networks, lack or shortage of local or domestic content, and low ability to achieve social and economic advantages resulting for Information-based activities (Guasch and Ugas, 2007).

Introducing the study area

Having an area of 64236 square kilometers, Khuzestan Province is located between the longitude of 47 degrees, 41 minutes, and 39 seconds of the longitude east of the Greenwich Meridian, and between the latitudes of 29 degrees, 58 minutes and 33 degrees, 4 minutes north of the Equator.

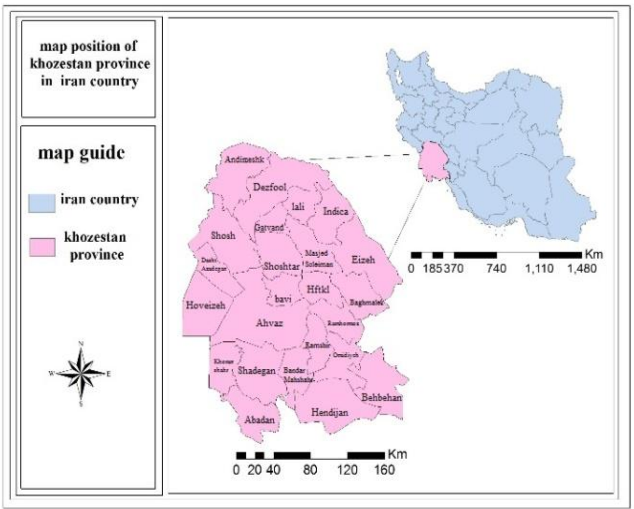


Figure 1. Geographical position of Khuzestan Province in the country

This province borders Ilam Province from the North West, Lorestan Province from the north, Chaharmahal and Bakhtiari Province and Kohgiluyeh and Boyer-Ahmad Province from the north east and east, Persian Gulf from the south and the country of Iraq from the west. It has 24 towns, 55 regions, 130 counties, and a population of 4531720 individuals (2011 census), 67 percent of which is urban and 33 percent is rural (Statistical Yearbook of Khuzestan Province, 2011).

MATHERIALS AND METHODS

This study falls into the category of applied research. Documentation and analytical methods were used to collect the data. Main research data comprised 24 ICT indicators. To analyze data, TOPSIS technique and cluster analysis were employed, using SPSS and EXCEL programs. In order to carry out weight assessment of the indicators, first, 15 questionnaires were distributed among ICT experts across the province, and, afterwards, using AHP technique, the weights of the indicators were determined. Also, to spatially illustrate of the results, the GIS software was used.

Questions and hypotheses

This study attempted to provide an answer to the following question:

- Are the towns of Khuzestan Province at a balanced level in terms of enjoyment of ICT indicators?

Based on the above question, the following hypotheses have been posed:

- The majority of towns in the province are underdeveloped or underprivileged in terms of ICT indicators.
- Development is concentrated, and Ahvaz, as the capital city of the province, enjoys the majority of ICT facilities.
- There is a relationship between the size of population of the towns of Khuzestan Province and development in terms of ICT indicators.

Indicators used in the study (Table 1)

X1: Ratio of number of public phones to urban work per 10000 urban individuals; X2: number of active GSM phones for each 10000 individuals of town population; X3: number of active long-distance phones for each 10000 individuals of town population; X4: ratio of landlines used by town population; X5: ratio of active landlines to the town population; X6: ratio of mobile phone subscribers to the total population; X7: ratio of households having a computer in the town; X8: ratio of urban households having a computer in the town; X9: ratio of rural households having a computer to all rural families of the town; X10: ratio of households having a portable computer where one member uses the Internet to all households using a computer in the town; X11: ratio of households having a portable computer where one member uses the Internet to all households in the town; X12: ratio of urban households having a portable computer where one member uses the Internet to all urban households using a computer in the town; X13: ratio of households having a portable computer where one member uses the Internet to all households in the town; X14: ratio of rural households having a portable computer where one member uses the Internet to all rural households having a computer in the town; X15: ratio of rural households having a portable computer where one member uses the Internet to all rural households in the town; X16: percentage of rural areas having telephone communication; X17: percentage of villages having rural ICT offices; X18: number of rural ICT offices for each 10000 individuals of rural population; X19: number of urban mail boxes for each 10000 urban individuals; X20: number of rural mail boxes for each 10000 rural individuals; X21: number of express mail units for each 10000 individuals of the town population; X22: number of video mail units for each 10000 individuals of the town population; X23: number of telephone mail units for each 10000 of the town population.

Table 1. weights of study indicators obtained using AHP model and expert judgment

Indicator	X1	X2	X3	X4	X5	X6	X7	X8
Weight	0.0721	0.0683	0.0120	0.0031	0.0028	0.0467	0.0054	0.0026
Indicator	X9	X10	X11	X12	X13	X14	X15	X16
Weight	0.0133	0.0057	0.0078	0.0060	0.0065	0.0098	0.0173	0.2552
Indicator	X17	X18	X19	X20	X21	X22	X23	----
Weight	0.0066	0.2992	0.0320	0.0137	0.0104	0.0096	0.0922	----

Models and techniques

TOPSIS technique: TOPSIS is one of the MADM methods which classify M choices considering N criteria. This model was first introduced by Huang and Yung in 1981 (Ziari and Jalilian, 2008).

TOPSIS algorithm is a very effective multiple attribute decision-making for prioritizing choices by similarity to the ideal solution, which is very low sensitivity to the weight assessment technique, and solutions resulting from it do not change substantially (Hekmatnia and Musavi, 2011). This model seeks to choose the shortest distance from the ideal positive solution and the longest distance from ideal negative solution in order to solve problems subject to various decision-making rules (Jadidi et al., 2008). The following are some of the advantages of these methods over spatial prioritization techniques:

- This technique simultaneously incorporates quantitative and qualitative criteria in positioning.
- Its output can determine the order of priority of choices and quantify this prioritization.
- It takes into consideration the contrast and consistency among indicators.
- Its procedure is simple and its speed is appropriate.
- It accepts initial weighted coefficients.

• The results of this model are fully consistent with those of empirical methods (Shayan, 2006).

Stages of TOPSIS algorithm

1. Establishing a data matrix based on N indicators and M choices.

$$A_{ij} = \begin{bmatrix} a_{11} & a_{12} & \cdot\cdot & a_{1n} \\ a_{21} & a_{22} & \cdot\cdot & a_{2n} \\ \cdot & & & \cdot \\ \cdot & & & \cdot \\ \cdot & & & \cdot \\ a_{m1} & a_{m2} & \cdots & a_{mn} \end{bmatrix}$$

2. Standardizing data and building a standard matrix.

$$r_{ij} = \frac{a_{ij}}{\sqrt{\sum_{k=1}^{m} a_{kj}^2}}$$

$$R_{ij} = \begin{bmatrix} r_{11} & r_{12} & \cdots & r_{1n} \\ r_{21} & r_{22} & \cdots & r_{2n} \\ \cdot & & & \cdot \\ \cdot & & & \cdot \\ \cdot & & & \cdot \\ r_{m1} & r_{m2} & \cdots & r_{mn} \end{bmatrix}$$

3. Determining the weight of each indicator based on $\sum_{i=1}^{n} w_i = 1$. In this respect, indicators with higher weights are more important.

$$V_{ij} = \begin{bmatrix} w_1 r_{11} & w_2 r_{12} & \cdots & w_n r_{1n} \\ w_1 r_{21} & w_2 r_{22} & \cdots & w_n r_{2n} \\ \cdot & & & \cdot \\ \cdot & & & \cdot \\ \cdot & & & \cdot \\ w_1 r_{m1} & w_2 r_{m2} & \cdots & w_n r_{mn} \end{bmatrix}$$

4. Determining the distance of the i[th] choice form the ideal choice (highest performance of each indicators) which is shown as A^+.

$\{(\max_i v_{ij} \mid j \in j_1)$،$(\min v_{ij} \mid j \in J\}\{= A^+$

$A^+ = (V_1^+, V_2^+, V_3^+, \ldots\ldots V_n^+)$

5. Determining the distance of the i[th] minimum alternative (lowest performance of each indicator) which is shown as (A^-).

$\{(\min_i v_{ij} \mid j \in j_1)$،$(\max v_{ij} \mid j \in J\} = A^-$

$A^- = (V_1^-, V_2^-, V_3^-, \ldots\ldots V_n^-)$

6. Determining a distance criterion for the ideal choice (S_i^+) and the minimum choice (S_i^-)

$$S_i^+ = \sqrt{\sum_{i=1}^{n} (v_{ij} - v_i^+)^2}$$

$$S_i^- = \sqrt{\sum_{i=1}^{n} (v_{ij} - v_i^-)^2}$$

7. Determining a coefficient equaling the distance of the minimum choice (S_i^-) divided by the sum of minimum distance (S_i^-) and the choice distance (S_i^+), which is shown as (C_i^+) and is obtained as:

$$\frac{S_I^-}{S_I^- + S_I^+} = C_i^+$$

8. Ranking choices based on (C_i^+). This amount varies between 0 and 1. (C_i^+) equaling 1 indicates highest rank and (C_i^+) equaling 0 indicates lowest rank (Nastaran et al., 2010).

Cluster analysis

Cluster analysis is considered one of the most highly used methods in area studies (Zaker Haghighi et al. 2012). It is used as a means for stratification of regions, choices, variables and even multiple attribute decision-making indictors (Movahed et al., 2011). In cluster analysis, attempts are made to divide observations into homogeneous groups, such that observations of one group are similar to each other and have the least similarity to those of other groups (Akbari and Zahedi, 2008). In this method, towns are classified into homogeneous groups in terms of their distance from other towns. In this method, the quantitative features of towns in each group have relative similarity to one another (Pourmohamadi and Zali, 2010). This technique enables researchers to appropriately classify and explain variables on the basis of their homogeneity.

Coefficients of variation

One of the fundamental ways to identify regional inequalities is use of the coefficient of variation (Ziari et al. 2010). Using this method, one can determine how imbalance the distribution of an indicator is among urban regions and areas. In other words, to determine the spatial distribution of indicators or the degree of inequality of development level among areas, the Wiliamson's coefficient of variation is used (Maleki, 2011). The overall structure of the formula is as follows:

In the above equations,

CV: coefficient of variation

X_i: value of a variable in a given region

$\bar{x}$: mean value of the same variable

n:number of regions: indicates greater inequality in the distribution of indicators among regions. (CV) is the high amount of coefficient of variation (Hekmatnia and Musavi, 2011).

RESULTS AND DISCUSSION

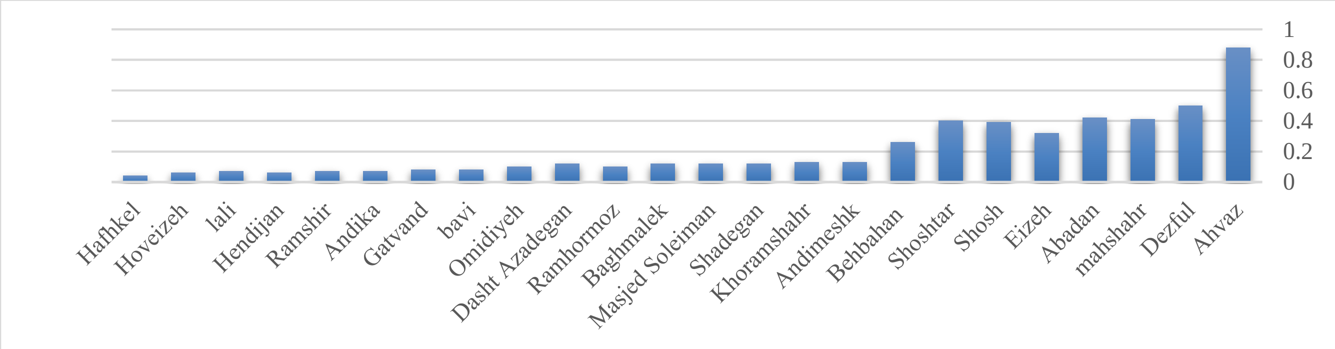
The results yielded through TOPSIS method (Table 2) reveal that the town of Ahvaz (capital of province), with the development coefficient of 0.879 has the highest degree of development in the ICT sector among all towns of the province and therefore occupies the first rank, and, the town of Haftkel, with the coefficient of 0.0423, is in the last rank.

The results are also indicative of inequality and great difference between the towns of the province in terms of ICT indicators. Accordingly, there is a digital divide between the towns, such that the final point of the most privileged town (Ahvaz) is 20 times higher than that of the most underprivileged (Hafhkel).

Table 2: Coefficient of priority and ranking of towns of Khuzestan Province in terms of enjoyment of ICT indicators.

Town	Priority coefficient C_i^+	Rank	Town	Priority coefficient C_i^+	Rank	Town	Priority coefficient C_i^+	Rank
Ahvaz	0.8793	1	Khoramshahr	0.1346	9	bavi	0.0750	17
Dezful	0.5012	2	Andimeshk	0.1315	10	Gatvand	0.0750	18
Abadan	0.4243	3	Shadegan	0.1210	11	Andika	0.0732	19
Bandar |Mahshahr	0.4122	4	Masjed Soleiman	0.1205	12	Ramshir	0.0720	20
Shoshtar	0.4021	5	Dasht Azadegan	0.1178	13	lali	0.0719	21
Shosh	0.3858	6	Baghmalek	0.1154	14	Hoveizeh	0.0613	22
Eizeh	0.3215	7	Ramhormoz	0.1011	15	Hendijan	0.0567	23
Behbahan	0.2605	8	Omidiyeh	0.0997	16	Hafhkel	0.0423	24

Graph 1. Ranking of towns of Khuzestan Province in terms of enjoyment of ICT indicators



Classification of towns using cluster analysis

After going through the stages of TOPSIS technique and calculating the sum of points if each own and determining their position in terms of the intended indicators, the towns were classified. To classify the towns into homogeneous groups, the hierarchical cluster analysis was used because of its more extensive application in geographical studies. Accordingly, considering the research objective and statistical data, the mean link method, which is one of the methods of building concentrated clusters in the hierarchical cluster analysis method, was used. The cluster analysis technique puts the towns with greatest similarity into one cluster. For this purpose, using cluster analysis, in terms of ICT indicators and considering their points in TOPSIS technique, the towns of Khuzestan Province were classified into three homogeneous clusters (privileged towns, semi-privileged towns, underprivileged towns) (Graph 2).

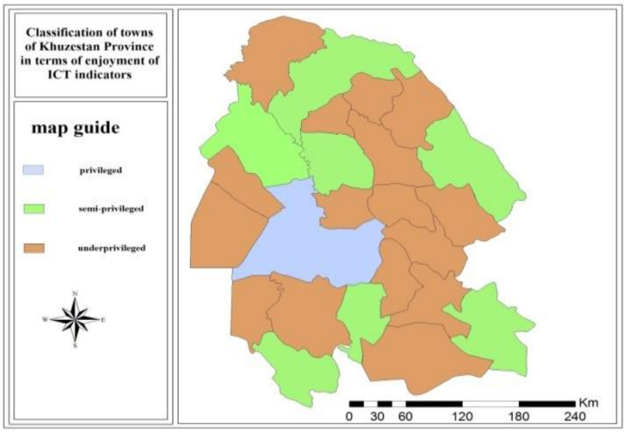
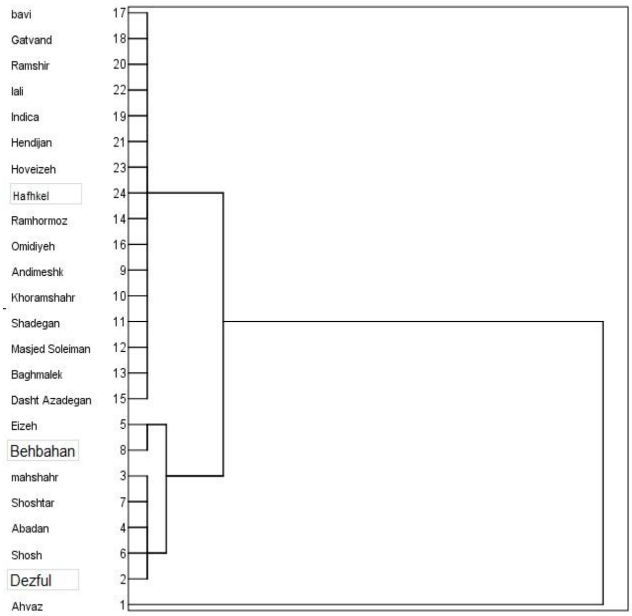


Figure 2. Classification of towns of Khuzestan Province in terms of enjoyment of ICT indicators

Graph 2. Cluster Graph of enjoyment of ICT indicators of the towns of Khuzestan Province



Testing the hypotheses

Hypothesis 1: There is inconsistency and imbalance between the towns of Khuzestan Province in terms of enjoyment of ICT indicators. In order to investigate this hypothesis, coefficient of variation model was used. In this model, the higher the coefficient of variation (CV), the greater the inequality among different regions. The amount of CV of the development of ICT in the towns of Khuzestan province was obtained at 1.93, indicating the existence of inequality in this regard. Therefore, the above hypothesis indicating lack of balance in enjoyment of ICT indicators among the towns of Khuzestan Province is verified.

Hypothesis 2: The majority of the towns of this province are underprivileged or deprived in terms of enjoyment of ICT indicators. After ranking the towns using the TOPSIS technique, according to the points of the towns and using cluster analysis, the towns were classified into the three levels of privileged, relatively privileged and underprivileged. As can be seen in Figure 1, the city of Ahvaz, home to 30.78 percent of the population of the province, is at the privileged level; the towns of Dezful, Shosh, Abadan, Shoshtar, Behbahan and Eizeh, accommodating 38.63 percent of the population of the province are at relatively privileged level; and the rest of the towns, accommodating 30.58 percent of the population are at the underprivileged level. According to the results of data analysis, 16 towns (66.66 percent of the towns of the province) are at underprivileged level. These findings confirm the research hypothesis.

Hypothesis 3: Development is concentrated, and the city of Ahvaz, as the capital of the province, enjoys the majority of ICT facilities. Under the influence of economic, social and political factors, development in the province is imbalanced and concentrated. Lack of appropriate investment in ICT in different regions of the province has created a side gap between these regions and the metropolitan Ahvaz. The town of Ahvaz, with a point of 0.879 and a 20-time difference from the town of Haftkel occupies the first rank. Therefore, the hypothesis is confirmed.

Hypothesis 4: There is a relationship between the size of population of the towns of Khuzestan Province and development in terms of ICT indicators. In order to investigate this hypothesis, the population size of the towns and their development in terms of ICT, Pearson's Correlation was employed. As illustrated in Table 4, the significance level is sig= 0/00, which is smaller than the untended alpha level α=0.01. Accordingly, it can be argued that the development of towns in terms of ICT has a direct relationship to their population, and towns with larger populations are more developed. Therefore, the hypothesis is confirmed.

Table 3. Population size and development rank of the towns of Khuzestan Province in terms of ICT

Town	Population	Rank	Town	Population	Rank	Town	Population	Rank
Ahvaz	1395184	1	Andimeshk	167126	9	bavi	89160	17
Dezful	423552	2	Khoramshahr	163701	10	Gatvand	64951	18
mahshahr	278037	3	Shadegan	153355	11	Andika	50797	19
Abadan	271484	4	Masjed Soleiman	113257	12	Ramshir	48943	20
Eizeh	203621	5	Baghmalek	107450	13	Hendijan	37440	21
Shosh	202762	6	Ramhormoz	105418	14	lali	37381	22
Shoshtar	191444	7	Dasht Azadegan	99831	15	Hoveizeh	34312	23
Behbahan	179703	8	Omidiyeh	90420	16	Hafhkel	22391	24

Table 4. Correlation between population size and ICT development of towns of Khuzestan Province

		Population	Degree of development
	Pearson Correlation	1	0.887**
Population	Sig. (2-tailed)		0.000
	N	24	24
	Pearson Correlation	0.887**	1
Degree of development	Sig. (2-tailed)	0.000	
	N	24	24

** Correlation is significant at the 0.01 level (2-tailed)

CONCLUSION

These days, ICT, as a foundation for development, is considered both the cause and effect of development. In other words, today, in a geographical domain, those parts that have more ICT facilities, services and infrastructures are much more developed than the other parts. They, furthermore, get developed faster than the other parts due to the fundamental role that ICT plays in achieving the information and necessities of development. Digital divide among geographical parts thus would lead to a sort of imbalanced development of those parts.

It is therefore crucial to know and evaluate conditions of different parts of a geographical domain for the ICT indicators, so as to fade away the existing digital divide among these regions; insomuch as to develop homogenously all the regions of a geographical domain. This would bring for a domain spatial and geographical justice. By the same token, in the present study the status of facilities and services of ICT among towns of Khuzestan has been evaluated by using 23 indices and different models and software, namely the TOPSIS model, coefficient of variation, AHP, SPSS and Pearson correlation coefficient.

Results of the analyses and evaluations done in the study indicate that the city of Ahavz, as capital of the province, has solely been on top of the privileged cities by a score of 0.8793. The towns of Dezful, Abadan, Mahshahr Port, Shoshtar, Shosh, Izeh and Brehbahan are respectively in the second to eighth rates and are on semi-privileged level. The towns of Andimeshk, Khoramshahr, Shadegan, MasjedSoleiman, Dasht-e-Azadegan, Baghmalek, Ramhormoz, Omidieh, Bavi, Gatvand, Andika, Ramshir, Lali, Hoveizeh, Hendijan and Haftgel are respectively in the ninth to twenty-forth rates and are on underprivileged level.

The calculated CV is equal to 1.93 which indicates the spatial imbalance among the cities and towns of Khuzestan Province, whereby the city of Ahavz in the first rate is twenty times more developed than the city of Haftkel, the last in the row. The results also indicate that there is a direct relation between the population of the

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cities and the rate of development and privileges of ICT indicators; that is, the cities with a larger population are more developed.

As the results of this study show, the seriousness of deprivation in different parts of province is not the same and therefore priority of investment in different parts is not the same either. The results show that in order to achieve constant regional development, which is one of the objectives of regional planning, the underprivileged cities and towns must be prioritized the first in investment, cities on the second level must go for the second priority and towns on the third level must be prioritized the third in ICT development plans.

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