

The efficiency of regional development plans through urban development indicators

Case study: Daraa Governorate in Syria

Research Summary

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ABSTRACT

This research aims to develop a comprehensive criterion for measuring the efficiency of comprehensive regional development. Actually, it measures the quality of life and the actual level of development of different settlements in Daraa Governorate (as a case study). This criterion tries to combine Accessibility as a compound spatial indicator, with other non-spatial indicators covering different domains: social, economic, and services. Also, this research tries to highlight the role of the Comprehensive Criterion as an effective diagnostic tool (development scale) within the hands of the decision-maker for directing the development processes such as defining priorities and targets, selecting, implementing, and evaluating a development strategy. Chapter 1 deals with the problem of research, objectives, hypotheses, delimitations of research, identification of the case study (Daraa Governorate), research methodology, research organization.

Studies in the available literature are reviewed in three chapters: Chapter 2 deals with regional development theories and strategies. It highlights the fact that there is no general theory of regional development and that the only way to find out how decisions are made is to analyze each problem separately on the spot, define priorities and targets then select, implement and periodically evaluate the strategy or the path of development. Chapter 3 Studies the spatial importance of urban nodes within the urban transport network by studying the quantitative analysis of urban transport networks based on a set of variables and indicators.

Chapter 4 deals with International Studies and Principles of the science of Development Measurement. It helps in designing and building the Comprehensive Criterion of this work. Chapter 5 will focus on developing a spatial criterion for Daraa Governorate using accessibility as a key indicator with other spatial indicators as a first step to developing a comprehensive development criterion. Chapter 6 deals with the procedures of developing the Comprehensive Criterion. It includes indicators that cover different domains: the economic, the social and the spatial. First, data on the non-spatial indicators was obtained from different sources i.e. census statistics and different administrations in Daraa Governorate. The data was analyzed using suitable statistical techniques. Accessibility as a compound indicator represents the spatial domain. Hypotheses of this research were tested. They were all accepted. The Comprehensive Criterion was built and validated. Chapter 7 deals with the role of the Comprehensive Criterion and the way it could be used through all the development stages. It proved to have an effective role as a diagnostic tool and as a guide for the decision-maker throughout all the stages of development. Chapter 8 works as a diagnostic tool for the current state of the governorate, results were calibrated through selecting and interviewing a sample using a Survey designed and built by the researcher. It deals with the economic problems to end with the strategies and policies that can be useful for the decision-makers side by side with the comprehensive criterion to improve the efficiency in the suggested regional development plans. While the final represents the conclusion of research. It presents research findings, recommendations, and suggestions for further research.

1. The problem and its Significance:

The main sections included in this chapter are as follows:

A. Statement of the Problem:

Syria ,as many other countries ,suffers from a state of imbalance in regional development which is mainly due to the lack of a clear vision at the side of planners and decision-makers to guide projects and development plans within the right tracks and within its appropriate spatial dimensions, those tracks

cannot be determined without relying on urban and development indicators through the existence of systematic and scientific analytical system to measure the efficiency of regional development plans. Unfortunately, many researchers in the field have always focused on the developmental potentials of the urban nodes or settlements without taking into consideration their spatial value inside the region or within the urban network, thus adding this spatial value in any development criterion will be one of the main factors for improving the efficiency of the regional development plans.

Therefore, this research tries to develop a comprehensive criterion (COMCRT) for measuring the effectiveness of comprehensive regional development. This criterion tries to combine accessibility as a compound spatial indicator, with other non-spatial indicators covering the social and economic domains as well as services and facilities. The research also tries to highlight the role of the COMCRT as an effective diagnostic tool (development scale) within the hands of the decision-maker for directing the development process.

B. Research Objectives:

This research aims at:

1. Developing a COMCRT for measuring the effectiveness of comprehensive regional development, so accessibility as a spatial indicator should be included side by side with the non-spatial ones.
2. Presenting the role of that COMCRT as a guide for the decision-maker in directing development processes such as defining the priorities and the targets, selecting, implementing, and evaluating a development strategy.

C. Research Hypotheses:

One general hypothesis and three specific hypotheses branching out of it are stated as follows:

A comprehensive criterion for measuring the effectiveness of regional development should include a spatial indicator in addition to the non-spatial ones. The general hypothesis could be branched out into the following specific hypotheses:

1. As a spatial indicator of development, accessibility will have significant association with a core of highly associated non-spatial indicators, through developing a comprehensive criterion.
2. If accessibility was dropped out from the comprehensive criterion the measurement of a certain significant aspect of development (e.g., settlements' ranking) would be significantly adversely affected more than if a strong indicator such as population size was.
3. The comprehensive criterion to be developed in this research will be superior in terms of accuracy in measuring development compared to any of the indicators comprising it.

D. Delimitations of Research:

- The COMCRT intended to be designed and built in this research is not a therapeutic tool but only a diagnostic one.
- The chosen settlements in the case study did not include the whole rural settlements in the governorate because of lacking data.
- Although validation of the COMCRT is only at Daraa Governorate, but the process itself could be applied and extended hierarchically for different areas (at the process level of governorates and regions as well as at the national and international levels).

E. Identification of the Case Study:

Daraa Governorate is the case study of the present research. The COMCRT was built using data from that Governorate. Daraa, in southern Syria, has a special importance due to its geographical location and its strategic importance, as it is a border gateway to Jordan from the south, and thus a land port to the Arab Gulf states. Also it is considered the southern gate of the capital, as it is only 100 km away from it.

In addition to that, it has its economic weight on the agricultural and commercial levels. It also includes many private universities, as well as the ancient city of Bosra, inscribed on UNESCO's World Heritage List, which gives it importance also in the field of tourism.

Some distinct characteristics of Daraa such as: location, natural characteristics and the economic base are briefly discussed.

F. Research Methodology:

This research is of the descriptive analytical type which consist of two stages the first aims at developing a spatial criterion for regional development plans which measures the spatial importance of urban nodes within the urban transport network, to be followed by the main stage that aims at developing a Comprehensive Criterion (COMCRT) and presenting its role as a guide for the decision- maker in directing development processes. Everything starting from reviewing the available literature, stating the problem, stating the objectives and hypotheses, testing hypotheses using statistical analysis, discussing and interpreting the results serves that aim. The procedures of developing the COMCRT were carried out in sequential stages, using primary and secondary data and different statistical techniques. These stages could be summarized as shown in following Figures:

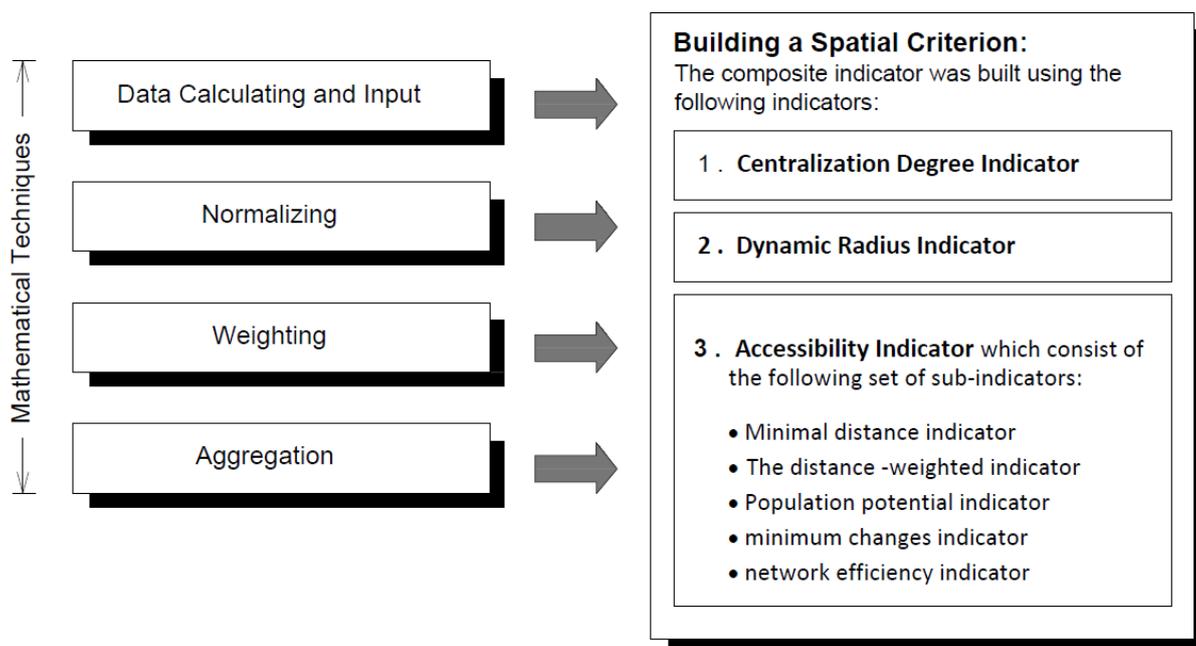


Figure 1

Summarizing the procedures of building a spatial Criterion.

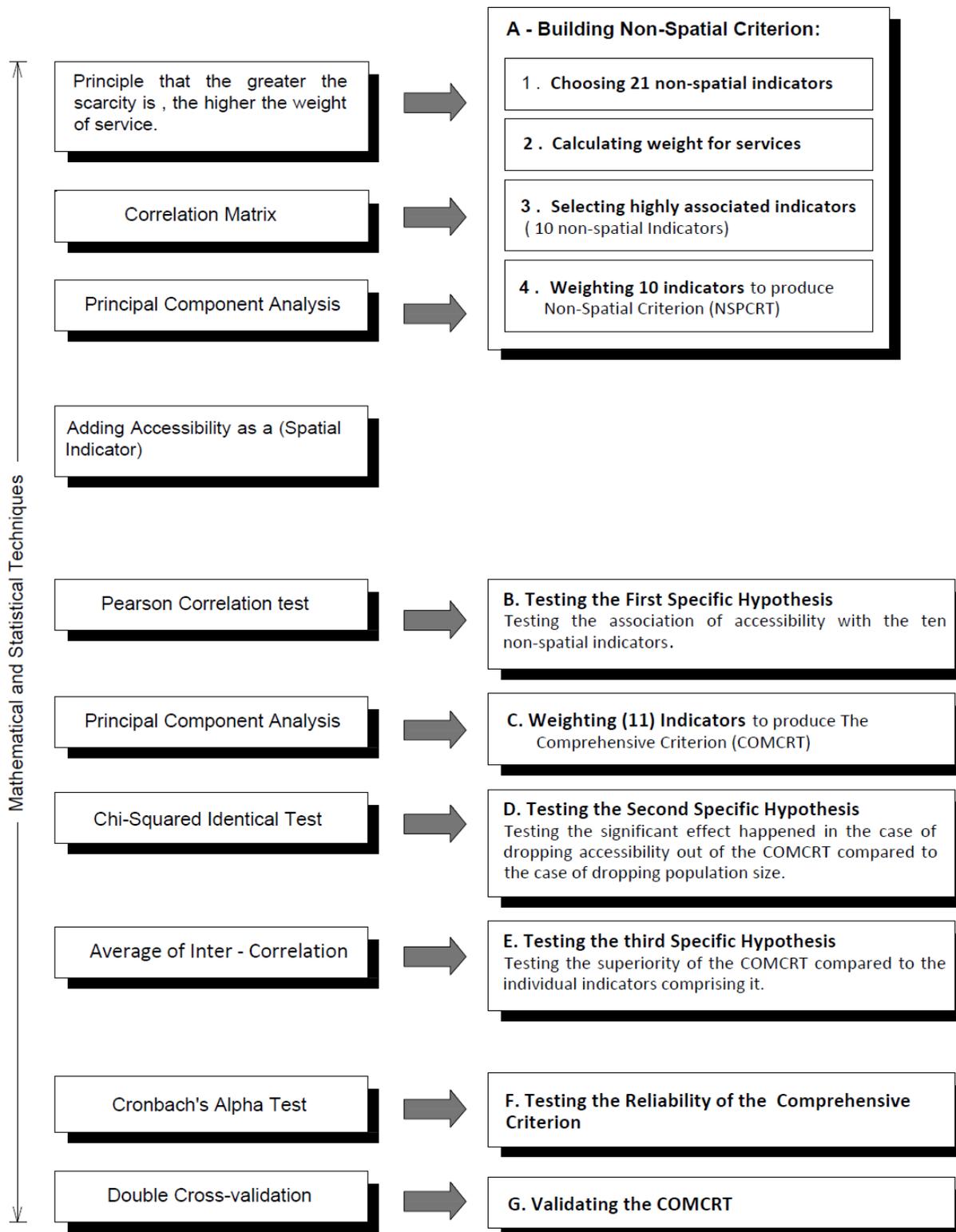


Figure 2

Summarizing the procedures of Developing The Comprehensive Criterion of Research.

2. INTERNATIONAL AND LOCAL STUDIES:

International and local studies that are relevant to the research were covered and categorized as follows:

- **The Study of a Comprehensive Criterion by The United Nations (1972)**
- **Studies of Comprehensive Criteria by Researchers:**
 - Study of Berry and Ginsburg (1960-1961).
 - Study of Bhat and his Team (1976).
- **Studies that Work as Sources of Development Indicators:**

Serval studies have been presented, some of the important examples:

 - Environmental and Quality of Life Studies (1993, 1998).
 - The World Bank Development Indicators Studies (1988, 1996, 1997).
- **Accessibility Studies (Spatial Indicators):**
 - Elena LÓPEZ-SUÁREZ 'study 2006-2007.
- **Local Studies in building a Comprehensive Development Indicator:**
 - The comprehensive sustainable development index for the Syrian state by A.Matouk (2010).
 - Comprehensive Spatial Development indicator by A.Ajaj (2016).

Conclusion:

Through surveying the literature dealing with the science of developmental measurement, following was concluded:

- Designing or developing the comprehensive criteria depends mainly on the excessive use of data and on advanced statistical analysis. There are three stages used in designing most of the comprehensive criteria. The first is collecting development indicators data, the second is selecting the best group of indicators (the core) that have the highest degrees of associations among them, and finally obtaining the composite score using PCA or any of the multivariate analysis techniques.
- Accessibility has become an important Value as an indicator of quality of life. This is due to redefining "Inequality" as a function of residential location-where people live- and how accessible they are to the jobs, goods, and services, so the spatial distribution of accessibility can be used to measure the existing disparities among regions.
- Through analyzing the methodologies of designing comprehensive criteria it was observed that the socioeconomic indicators received full attention criterion (accessibility) was not fully considered. In some measures accessibility was missed and in some others it was measured by rough variables dropped through the analysis. None of the reviewed criteria has included a single synthetic criterion of accessibility. This may be due to the complexity of calculating such criterion. So, the real challenge of the present research was to use a single synthetic criterion of accessibility and to test its significance with the purpose of qualifying it with other non-spatial indicators to finally develop one comprehensive criterion.

3. Results of the Research:

Through developing the COMCRT and testing the research hypotheses the following major results were obtained:

- The First Specific Hypothesis:

The first hypothesis tested the degrees of association between accessibility and the core of ten non-spatial indicators out of twenty original ones. The Pearson Correlation Test was used and a test of significance was applied using the distribution of "t". The null hypothesis of zero correlation was rejected at level of significance = 0.05 whereas the tabulated correlation was 0.378. The average correlation of accessibility with the core of ten non-spatial indicators was 0.489. Thus, the first hypothesis was accepted and accessibility was added to the previously mentioned core of non-spatial indicators to develop the COMCRT.

- **The Second Specific Hypothesis:**

The second hypothesis compared the significant effects happening for the settlements ranking when each one of accessibility and other strong non-spatial indicators such as population size (TPOP) was dropped out of the COMCRT. Chi-Squared Identical Test was used twice and the results could be concluded as follows:

A. In the case of dropping Accessibility(ACES):

The null hypothesis of identical was rejected at level of significance $\alpha = 0.05$ whereas $\chi^2 = 10,57$, and p-value = .03.

B. In the case of dropping Population Size (TPOP):

The null hypothesis of identical was not rejected at level of significance $\alpha = 0.05$ whereas $\chi^2 = 3,77$, and p-value = 0.8 .

Thus the second hypothesis was accepted, which has provided a crucial proof of the significance role of Accessibility in the comprehensive criterion.

This Specific hypothesis has tested the significant effect of dropping each of accessibility and population size out of the COMCRT. The significant effect was much bigger in the case of dropping accessibility.

The explanation of this is when population was dropped the other non- spatial indicator compensated its being missed, because they measure similar features, so dropping anyone of them could be compensated by the remaining indicators. The story is different when accessibility was dropped because it measures a salient feature (spatial) that couldn't be measured by the non-spatial indicators. For this reason when accessibility was dropped significant effects happened because none of the non-spatial indicators could compensate it. At this point it could fairly be said that accessibility fulfills the diversity principle of the COMCRT.

- **The Third Specific Hypothesis:**

The good compound measure has to be superior to the individual indicators comprising it. It is the measure that bears the higher correlation with the individual indicators comprising it, so it contains least error. The superiority of the COMCRT was tested using correlation matrix against the eleven indicators comprising it. The COMCRT developed in this research has achieved the biggest average of inter-correlation with the other indicators, which was 0.77. Thus, the third hypothesis was accepted and the COMCRT has proved to be superior to the other indicators comprising it All the three specific hypotheses of research were accepted, accordingly the general hypothesis that a comprehensive criterion for measuring the effectiveness of regional development must include spatial criterion in addition to non-spatial one is Accepted Also, it could be concluded that the COMCRT is a solid measure of growth and has less fluctuation because it has the highest average inter-correlation with the other indicators comprising it.

- **Reliability of the COMCRT:**

The reliability of the COMCRT was measured using the Cronbach's alpha test which scored a high value $\alpha = 0.92$. Thus there is a high level of reliability among the data of the chosen indicators, and the entire data set model was accepted.

- **Validation of The COMCRT:**

The COMCRT was validated through splitting the original data set into two samples and a double-cross validation method was used. Loads, scores were stable and reasonable. The actual ranking of settlements was compared to the predicted one in both samples, so the Chi-Squared Test of Identical was used twice. The null hypothesis of identical could not be rejected at level of significance = 0.05 in both the two samples Thus, the COMCRT was validated.

4. THE ROLE OF THE COMCRT AS A GUIDE FOR THE DECISION-MAKER:

The COMCRT could be a valuable tool within the hands of the decision-maker for directing and controlling the development processes particularly when defining the development selecting, drawing, and evaluating a development strategy. Important issues could be searched effectively by the COMCRT, which could be concluded as follows:

A. Viewing the Hierarchical Classification of Settlements:

The COMCRT presents the structural hierarchy of settlements representing the form of growth in the region and can provide different hierarchical classifications that could help in important issues when selecting or drawing the strategy such as:

- The Typology Structure The Spatial Distribution of Settlements.
- Designing models for Distributing Services and Facilities.
- Organizing of Research Activities among Decision-Making Levels.

B. Viewing the Type of Settlements' Distribution:

The COMCRT could evaluate the form of settlements' hierarchy and its defects by viewing settlements' frequency distribution, and Rank-Score Distribution that could replace effectively the Rank-Size distribution. Two important issues could be searched as follows:

- The Rank-Score Distribution.
- The Frequency distribution of Settlements.

Although Daraa Governorate needs for a comprehensive development in both of urban and rural areas but development of rural areas represents the highest priority in the governorate. According to the COMCRT score the majority of villages' stratum in Daraa governorate distributed under the average between the range of (40-30) and eight towns distributed within 10 degrees range under the mean, while only seven towns distributed within 10 degrees over the mean. Also, the scores of these villages are under 50% of Daraa City score.

C. Working as a Reference for Development Indicators:

The COMCRT could work as an average for settlement's indicators for producing *A Development Profile of Settlement*. The development profile is a fluctuating shape that presents different levels of development of different sectors in a specific settlement. Although it cannot determine the ideal levels of development indicators, it can work as a reference or a datum line which the settlement can compare itself after a period of time. Development Profiles could be obtained at:

- The Governorate's level.
- The settlement's level.

D. Working as a Base for Further Research:

There are many studies that could benefit from using the COMCRT as a base or a starting point for further research such as:

- Developing Existing Models such as: The Rank-Size Rule, The Evolutionary Model Berry, and The Gravity Laws.
- Optimizing of Development Indicators.
- Typological differences analysis.

5. The Wide Application of The COMCRT:

The Main benefit from the COMCRT process is to implement different forms of the application over different areas to make a wide generalization of the process. It could be applied with different forms and in hierarchical scales as follows:

A. At the Governorate Level:

The application will enable the decision-maker to implement efficiently plans of the Comprehensive development in the governorate. He can control implementation and evaluation processes of developmental activities at different hierarchical levels in the governorate.

B. At the Regional Level:

Two distinct types of applications could be implemented as follows:

- Application using specific groups of governorates searching for consistent characteristics in the form of growth. This may help in understanding the similarity of growth and nature of development in governorates forming a specific region. Policies and strategies could be stated for that region.
- Application could be carried out using a big region such as southern or eastern region, which will sustain the governmental efforts for developing this underdeveloped region particularly by launching an enormous project.

C. At the National Level:

Application could be carried out over the whole country either over the governorates or its capitals. This could be of value in diagnosing the regional disparities over a country as Syria that suffers excessively from regional disparities between developed and underdeveloped regions, which could threaten the social balance and the development of the whole country.

D. At the Level of Islamic and Arabian Countries:

Application could be extended to cover Arabian, Islamic, and developing countries. The process here has a strategic dimension that could unify these societies of the Third World, in defining the common problems, stating objectives, then implementing policies and strategies. This could serve the strategic aim of the comprehensive unity among them.

E. At the International Level:

Application could be extended to cover the national levels particularly with the cooperation of The United Nations or The National bank. Adding some social indicators representing the weakness in the body of the developed countries such as crime rate, divorce rate, rate of AIDS, and pregnancy without marriage rate will enhance the picture of development of the Islamic societies in the world ranking. Also, this will attract the attention of foreign societies particularly American and Western societies to negative characteristics in their modern civilization, which could threaten the positive characteristics. This also will be an apparent practical message of civilization of Moslem societies.

6. Research Recommendations:

This section presents suggestions and recommendations of the present research that aim at directing the decision-maker to efficiently apply the COMCRT.

A. Measuring the effectiveness of comprehensive Regional Development:

It was emphasized in the present research that "the effectiveness of development" means measuring the quality of life. It could be concluded that efficiency of measurement could be achieved through the following:

1. Using a comprehensive criterion which comprises different indicators covering different domains, since it was proved that the COMCRT is superior in terms of accuracy in measuring development compared to any of the individual indicators comprising it.
2. Regional development is an integrated process that runs from above and below through organized stages. This process cannot take place without the participation of residents and local communities.

3. Calculating accessibility by using different methods and equations such as the ones presented in the research, and comparing their results and scores to avoid any bias by relying on calculating only one type of accessibility indicator.
4. Involving accessibility side by side with non-spatial indicators to build a comprehensive criterion is inevitable. It was proved that if accessibility was dropped out from the COMCRT the settlements' ranking will be significantly adversely affected more than if a strong indicator such as population size was.

B. Developing and Enhancing the COMCRT:

Developing and enhancing the COMCRT are continuous processes that require the following:

1. Replicating the COMCRT process as possible as could be from time to time in Daraa Governorate particularly if it is supported by the government. This could help in studying the nature of growth and in verifying the stability of the coefficients over time.
2. Adding more settlements, also testing adding more indicators (such as sustainable and environmental indicators). Their significance for developing the COMCRT could be tested and verified the same way of testing and verifying accessibility.

C. The Wide Application of the COMCRT:

As mentioned before, the main benefit from the COMCRT process to implement different forms of application over different areas to make a wide generalization of process. It could be applied with different forms and in hierarchical scales. Any generalization could be drawn according to scale and time of data. To fulfill any application of the COMCRT process main pillars have to be established as follows:

1. Convincing the decision-maker of applying the COMCRT process should be the starting point. This could be done by researchers in the field.
2. Developing a network of Analytical Units to be responsible of implementing the COMCRT process and sustaining the decision-maker effectively at different hierarchical levels.
3. Working in Connection with GIS Programs as they provide high efficiency of recording and presenting enormous data in the form of maps, reports and different spatial analysis outputs.
4. Working in connection with Systems of Collaboration through the Internet. This enables decision-makers to share an enormous amount of information through the analytical units at the same time and with no barriers of distance, time, cost and bureaucracy.

D. Using the COMCRT in Applying Strategies of Development:

The sequential stages of methodology presented below could be applied to any development project. The stages are as follows:

1. Identify problems and development shortcomings.
2. Inducing the Population to participate in the development process.
3. Planning the Development Program.
4. Implementing the development Program.
5. Evaluating the Achievement.

Usually the drawback of this strategy are principally in the area of application.

Using the COMCRT process could greatly develop and enhance its implementation.

E. Suggestions for Further Research:

1. Applying the process of the COMCRT with different forms and scales in different locations.
2. The role of the COMCRT in discriminating different areas according to the actual level of development which by turn paves the way for studying the typological differences.
3. Designing models for the distribution of services and facilities based on the hierarchical classifications obtained by the COMCRT.
4. Developing existing models by replacing the population size with the composite score of the COMCRT.
5. Optimizing development indicators to maximize the composite score of settlement.