

Using the urban indicators to measure the performance of urban development in Medina

Khalid, M, Abu-Bakr

Assistant Professor at Housing & Building National
Research Center [HBRC)
Cairo - Egypt
urbankh@yahoo.com

Soliman, S, Aborawash

Urban & Regional planning expert
Founder of SUSURB for Urban and Architect
Cairo - Egypt
Saborawash1789@gmail.com

Abstract

The urban observatories are an important technique in managing urban development, observatories are new information industry. Developing in this industry will produce smarter cities to live in to enhance economic, social and culture values. The experiments of the urban observatory of Medina are reviewed, to determining how urban indicators influence the measurement of urban management efficiency and its performance in Medina region. That was monitored in all stages of urban growth and measured at fixed intervals. This paper aims to determine and analyze the importance of urban indicators for balancing, managing and following-up the urban development, also determining how urban indicators can guide the development decisions to the right directions. This paper studied the functions and activities of the local urban observatory of Medina, and how it is a useful tool for policymakers and decision-makers to make appropriate decisions and policies to deal with urban issues in different dimensions for both local national levels. This paper identifies the urban indicators at the level of Medina and analyzes them, also develop and add new indicators to improve the urban planning processes. The development of indicators will also be useful in improving the measurement and the management of urban development. The paper develops suggested methodology for using indicators for measuring development management and planning. This methodology guides the urban development process to the right track. It leads to a specific conclusions and recommendations that will increase the effectiveness of urban indicators, also how to benefit from indicators in measuring the sustainable urban development in Medina

Keywords: *Urban observatory, Medina, Urban management, Indicators, Information industry.*

I. INTRODUCTION

The idea of urban observatories originated through the United Nations Center for Human Settlements (Habitat) to assess the conditions and trends of global urbanization.

The Kingdom of Saudi Arabia was one of the Leading countries in the Arab world to start establishing local urban observatories since 1423H [1].

In its 3rd session, on Zo-Elhega 27, 1422H, the Medina Council recommended the establishing of Municipal Urban Observatory under the auspices of the Medina Secretariat [2]. Thence contracts were signed with a National Consulting office for establishing the Urban Observatory and design its database in 1423H [3], which is the first observatory in the Arab region issuing a full indicator package. The United Nations Human Settlements Program [UN-HABITAT] also launched the Habitat Award for Excellence in Urban Observatories in the name of the Medina and Habitat Award for Urban Observatories. [4]

A. Research problem

The problem of that research is how to improve the urban management by information industries and technologies by measure and manage the sustainable development in Medina through urban indicators, which quantitatively Measure the progress of medina society, and help in achieving the urban development planning goals, and how they achieve economic, social and environmental goals.

B. Research Hypothesis:

Information industry can improve the quality of using of urban observatory indicators by gives a dynamic image for urban development. The Information supports the development measurements and follow-up; also reflect economic, social and environmental factors. Subsequently indicators can lead the possibility of adjusting the development processes towards the right direction continuously, over successive periods of time, these leadership may answer the research question about the measurement and management of urban development?

C. Research goals:

The main research objectives are:
Adding policies to use the growing information industry sector in manage urban technique.

Analyze and understand the indicators of the Urban Observatory of Medina.

Identify the importance of indicators in measuring, managing and follow-up the urban development.

Monitoring horizontally and vertically how they help in achieving the desired goals, and guide the decisions of urban development to right track.

D. Research Methodology:

The Urban Observatory Network in Saudi Arabia will be reviewed and discussed. The research will also exam the relationship between the urban observatory of Medina, regional and national urban observatories in the KSA, illustrate how to develop current indicators and illustrate how to add new indicators. The importance of using urban indicators for the measurement and management of urban development will therefore be addressed, which lead to the development of the proposed methodology for the use of urban indicators in performance measurement for urban development management. And then reach to determine the results and proposed recommendations for its development. This will improve the possibility of measuring and following-up sustainable urban development goals.

II. THE URBAN OBSERVATORIES

A. The urban observatories network in Saudi Arabia

The Kingdom of Saudi Arabia represented by the Ministry of Municipal and Rural Affairs "MOMRA" has sought to adopt the idea of establishing the Urban Observatories Network. The Urban Observatories Network in Saudi Arabia consists of the National Urban Observatory, which coordinates the network of 14 urban Observatories in the regional capitals and the local urban observatory of Jeddah Governorate [5].

Its role is to collect information, calculate urban indicators, analyze, study how to use them in the national urban policies, and encourage the participation of the private sector and civil society organizations in the process of defining the framework of national level indicators that reflect the specificity of Saudi Arabia, as well as the urban indicators agreed globally and regionally in Arab countries.

The Urban Observatories responsibility

The National Urban Observatory and other existence local observatories are under the responsibility of the National Urban Observatory. However, national indicators are only the average of the local urban indicators, Figure 1 shows the Urban Observatories Network for Medina Region. [6]

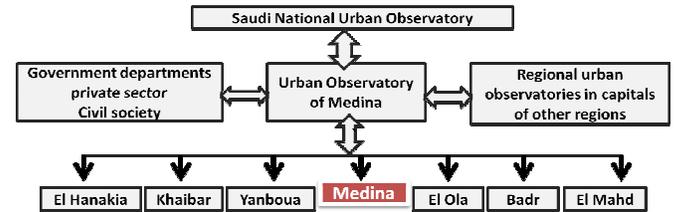


Fig. 1 the Urban Observatories Network for Medina Region

B. Local Urban Observatory of Greater Medina

The main objective of the establishment of the local urban observatories is to produce a set of indicators, which reflect urban phenomena with their social, economic, urban and environmental dimensions. And help decision-makers in the process of urban development. It also aims to link its network to the information sources, and the Private and civil society institutions. [2]

III. URBAN INDICATORS AT THE LEVEL OF MEDINA

The urban observatory of Medina city dealt with many urban indicators. The number of urban indicators produced reached sixty-eight indicators, which divided into seven main axes. Each axis includes a set of indicators, as shown in Table (1).

TABLE (1) URBAN INDICATORS CONTAINED IN THE REPORT OF THE URBAN OBSERVATORY OF GREATER MEDINA

Urban indicators contained in the reports of the Urban Observatory of Greater Medina	
The first Axis: General Background Indicators	
Land use budget	Population by sex, age and population density
Annual population growth rate	Number of households
Average size of family	Rate of family composition
Income distribution	GDP per capita
Type of possession	Total possession
The second axis: indicators of social and economic development	
Index of poor households	Informal employment
Number of beds in hospitals	Child mortality
Life expectancy at birth	Illiteracy rates for the aged
Pre-university rates	Average number of students per class
Crime rates	Unemployment rate in university graduates
Saudis rate in the private sector	Rate of spinsterhood
Percentage of school buildings conforming to specifications	Enrollment rate in tertiary education
Percentage of social institutions concerned with women	
The third Axis: Infrastructure Indicators	
Level of home connections	Access to clean water
Average water consumption	Price of water
Drainage on infrastructure	
The fourth Axis: Transportation Indicators	
The type of transportation to work	Average daily work time per minute
Annual per capita expenditure on	Rate of ownership of cars

TABLE (2) URBAN INDICATORS PROPOSED AND ADDED TO THE REPORT OF THE URBAN OBSERVATORY OF MEDINA

road construction	
Road lengths	Average road accidents
The fifth axis: Environmental Management Indicators	
Percentage of treated wastewater	Average per capita production of solid waste
Solid Waste Disposal	Regular collection of solid waste
Demolished and collapsible buildings	Air pollution
Per capita green areas and parks	
Sixth axis: Local indicators	
Average capita income	Per capita investment expenditure in Medina
Debt services	Local administration staff per 1000 inhabitants
Ratio of wages and salaries to total expenditure	Percentage of expenditure on local contracts of total expenditure
Number of voluntary organizations per 100,000 inhabitants	Governmental level of services
The level of independence of the local government	Percentage of e-government departments
Percentage of e-government departments	Percentage of citizens' satisfaction with government services
Percentage of female representation in government departments	
Seventh axis: Housing indicators	
Average house price to income	Rate of rents to income
Average land price to income	Number of square meters allocated per person in the house
Percentage of fixed buildings	Percentage of buildings meet official requirements
Rate of construction of buildings	Investment in housing
Proportion of housing with real estate loans	Percentage of public housing
Percentage of grants to citizens	Percentage of vacant housing

IV. DEVELOP AND ADD NEW INDICATORS TO THE URBAN OBSERVATORY

For the optimization of the information industry in urban observatories, some indicators of the urban observatory of Medina should be reviewed and new indicators should be added. The Urban Observatory of Medina considers that the aim of issuing urban monitoring indicators goes far beyond satisfying the requirements and decisions of the Istanbul Conference in 1996. The indicators are effective tools to detect and to monitor the social and economic phenomena and to identify the problems of society. The indicators also serve the development of Medina in achieving a better level of the quality of life. [3]

Hence the recommendations to adopt and adding new indicators for the Urban Observatory within the current indicator packages, like the indicators of the initiative of protecting children (extrapolation of the children circumstance in Medina), the package of indicators of Hajj and Umrah and indicators representing all aspects of society. The suggested indicators criteria upgrade the total number of indicators to 107. Table (2) shows the list of urban indicators divided into groups. The following indicators are presented as follows:

Additional urban indicators proposed				
Child Protection Initiative indicators				
Basic Indicator	Performance indicators	Basic Indicator	Performance indicators	
Food indicators	Percentage of children underweight	Health indicators	Proportion of births under medical supervision not performed under medical supervision	
	Proportion of children suffering from malnutrition		Proportion of children immunized against epidemics (paralysis, tetanus, etc.)	
	Proportion of children whose breast-feeding is less than three months and more than six months		Chronic respiratory diseases (prevalence of these diseases)	
Indicators of health resources	Government expenditure on children's health and proportion of total health expenditure	Demographic indicators	Children with disabilities, average age and classification	
	Number of doctors versus patients		Number of children and juveniles and their proportion of the population (0:13, 14:18 and 19:21 years)	
	Number of hospitals with sections for children		Total Fertility Rate	
Education indicators	Continuing primary education (percentage of children completed primary level of total enrollment)	Education Resource Indicators	Crude birth rate (number of births per 1,000 inhabitants)	
			Government spending on education	
			Number of schools in different stages	
Social indicators	Percentage of juvenile crimes for total crimes (within a specified time period)	Social indicators	Number of students versus teacher	
			Child labor, prevalence and classification by gender	Refugee children and irregular children with irregular residence
				Children orphaned and unaccounted for by parents and their classification by sex
			Number of street children average and classification by type	
Indications for Hajj and Umrah				
Basic performance indicators		Basic performance indicators		
The proportion of arrivals and departures for Hajj and Umrah through the ports of Medina		Occupancy rate of pilgrims throughout the year		
Average number of cases of prostration for pilgrims		Percentage of annual increase in the number of pilgrims in Hajj and Umrah		
		Percentage of visas issued by nationality of pilgrims		
Specific indicators for the knowledge community				
Number of daily newspapers published in the city (per thousand inhabitants)		Number of newspapers distributed in Medina (per thousand people)		
Number of patent applications (per million inhabitants)		Number of mobile subscribers (per 1,000 inhabitants)		
Suggested indicators from the Urban Observatory				
Basic Indicator	Performance indicators	Basic Indicator	Performance indicators	

Socioeconomic indicators	Rate of room congestion	Local indicators	Administrative corruption
	Maternal mortality rate per 10,000 live births		Transparency and credibility scale
	Per capita private sector / government sector	Infrastructure indicators	Liquid waste production

A. Reasons for establishing an urban observatory

The sustainable development is what meets the everyday needs for citizens without compromising the ability of coming generations to meet their future needs, by active collaboration between representatives of all diverse interests. To ensure that the resources are shared and the development of plans are designed for all representatives.

Local partners can establish an urban observatory for many Reasons for contributing in sustainability these. These reasons may include:

- It will produce an urban database and information, through the coordination of various sectors and partners within the city or country
- Facilitate the participation of private and public stakeholders in develop their own regions through the preparation of urban data at an appropriate level.
- Support the decision-making processes and strengthen governance within the urban area by disseminates the local information. [4]

The geographical scope of the work of the urban observatory has been determined through the concept presented by the regional plan of Medina, where it exceeded the current narrow urban scope of Medina. The principle of spreading the urban development outside the current urban scope of Medina, which in line with the national urban strategy was followed. Hence, the local urban observatory of Medina deals with the proposed growth limit of Medina. This limit divided into seven urban sub-municipalities (Al-Haram - Quba - Al Awali - Sun - Al Aqeeq - Al Ayoun - Al Baida), in addition to the six suburb municipalities (Al Owaina - Abyar Al-Mashi - Al-Mandasa - Al-Suwaidra - Al-Muleih - Al-Fareish), Figure 2 illustrates the administrative boundaries of the supervised area of the Medina.

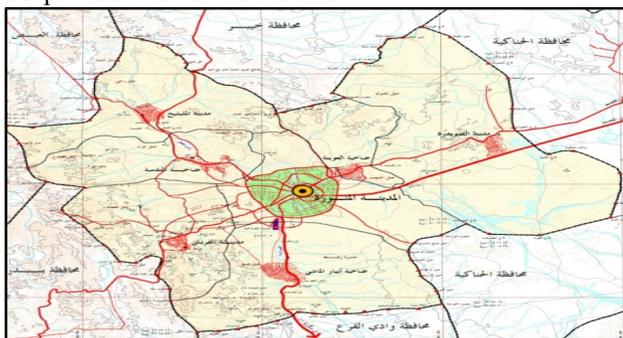


Fig. (2) the administrative boundaries of the supervised area by Medina and the administrative division of Medina [9]

Urban development refers to all processes that deal with urban structures, regional balance, regulation of land uses distribution, settlements economic rules, and associated population and workers, that all within the context of the determinants of the situation, location, and controls of social and cultural values, also resource constraints and determinants of adaptation to the natural environment without wasting their resources. [10] The importance of urban development comes from the fact that it is the main engine of many economic industries such as construction, construction and urbanization. [11] The importance of urban development has been increased since the idea of sustainable development was proposed by the Brentland Committee in its 1987 report. Generally, researchers whom support this trend have understood the concept of sustainability and they generated the term of sustainable urban development, which has been defined by several definitions, which include:

The definition proposed by William Reese is an expression of positive social and economic change that does not weaken the social or ecological systems in the societies; this successful implementation of sustainable development requires integrated policy, good planning and social systems. [12]

Sustainable urban development is defined as a change in the method of how development understood and developed, and therefore the methods of how cities are understood, planned and managed must be changed, with a focus on the goal of achieving urban sustainability [13]

the urbanization trends is concentrated on trying to prevent cities from growing more in order to decrease the negatives and difficulties resulted from this urban growth, so there were been many trends and attempts to overcome those negatives.

Now the focus of modern urban development is on how to manage urbanization, because the urban growth of these cities is inevitable. And dealing with urban development must be done through a good management of city, which offers a different new challenge imposed by the trend of sustainable urban development.

A. Urban management and its role in development

Urban management is an essential element of development as it plays a key role in benefiting from the human, natural and urban resources that are the most important potential of society. Therefore, urban management is one of the essential elements of economic growth and poverty alleviation. It is also one of the essential needs for central and local governments and non-governmental sectors. This contributes to improving the urban environment [14]. The field of urban management is a wide area, and its concept depends on the point of view of the body that deals with it. The definition adopted by the research is: urban management: Effective in the development and management of resources in order to achieve the goals of urban development in the city to improve the quality of life [15].

B. The importance of urban indicators in measuring and managing urban development

Urban indicators are one of the most effective mechanisms for measuring the extent of progress in urban communities in their different levels. Towards the desired results of development, they provide a numerical vision. That vision can be calculated and integrated in equations to compare to other cities or countries periodically, which give a clear picture of the state of development Efficiency. [16] Where periodically can be followed to development progress and to achieve the objectives of sustainable development plans for urban communities.

The development indicators serve many purposes. They measure and track the rate of implementation of development strategies, policies and programs in a city or a region. They provide to the decision-maker comprehensive and integrated information about the current situation in his city or region. They also raise warning signs early during the implementation of any development plan or strategy. They can also make a comparison between urban communities horizontally (cross-country) or vertically (across different times).

They also raise the citizens' awareness for the reality of development in them city, and the indicators represent the analytical aspect of planning. Therefore, their credibility and consistency are vital when they selected as planning tools. Indicators to be successful in their mission, they must be an effective guide especially in the process related to changing the priorities of the society, decision-making and policy-making, and the behavior of individuals and institutions.

Lack of quantitative targets weakens the planning process and distorts the orientation of efforts to achieve these objectives.

- focus on traditional oversight is no longer sufficient to judge on the real performance in many public sector agencies, this focus weakens the accountability and loses the role in reform and development.
- Quantitative measuring of governmental performance are the base for adding the administrative and institutional dimensions in development plans and for calculating the budget required to meet the needs of the whole community.
- Quantifying the performance of governmental agencies encourage them to more effort and better use for resources to achieve the defined goals of efficiency.

C. The Proposed methodology to use information industry to measure the performance and efficiency of urban management

The Concept of Measuring Performance is how to collect data systematically and objectively to determine the efficiency and of services and achievement of objectives [13]. That represent how the urban management processes achieve the development objectives, indicators are tools for measuring and there is an importance to innovate about its uses, they are a tool

to improve the efficiency of services for all citizens. There is a need to highlight on the importance of using urban indicators as a comprehensive tool in the measurement of performance in management of urban development through monitoring to achieve its objectives. Accordingly, it can be said that the indicators of urban observatories play an important role in the measurement of urban development through the following stages:

1) Current situation stage

The urban observatory uses secondary data sources, and makes estimates to form a general picture of the cities and aims to collect data for specific purposes in the future by the statistical authority. Urban indicators are used at this stage as follows:

As a quantitative tools and statistical data that will lead to understand the current state of Medina as one comprehensive unit.

Diagnostic tools to identify the difficulties, problems and challenges are faced in different sectors of Medina

2) Working to future Stage

The strategy of collect useful information about urban conditions, and the restructuring and formulation of such information and indicators, by appropriate analytical methods and application in the preparation and adjustment of urban policies and plans as follows:

Use indicators as key tools in decision making.

Use indicators as tools to follow up urban development and monitor the implementation of plans of development.

Use urban indicators as analytical tools to study the impact of policies and strategies of urban, economic, social and environmental development.

Use urban indicators as tools to assess the quality of life.

The conclusion of accurate indicators accurately monitors progress in solving the difficulties and challenges those citizens continuously.

Using of information industry in linking the urban observatory and indicators with the following:

Smart phones applications and techniques to improve the indicators quality.

Road sensors and cameras measure the traffic on roads, Increase the linkage between governmental departments sectors by hi bandwidth connections.

Link it with the urban observatory to direct update of urban indicators.

Link urban observatory directly by other governmental sectors and decision makers and decision takers.

VI. CONCLUSIONS AND RECOMMENDATIONS:

A. Results

1) *The Urban Observatory Department of Medina adopted the adding of new indicators to the urban observatory to meet the decisions of Istanbul Conference in 1996.*

2) *Urban indicators provide quantitative and qualitative information, which help to prioritize urban development, indicators serve as a basis for development policies and plans to achieve economic, social, and urban objectives.*

3) *The urban observatory project of Medina observed several monitoring mechanisms, through large number of urban indicators [107 indicators] covering wide range of urban aspects including Hajj and Umrah indicators, thus mislay the normal indicators the main focus of the urban observatory*

4) *One point of view of Medina Urban Observatory cannot identify specific objectives, analyze community issues and prioritize the urban issues and indicators. Some government agencies, private institutions and civil society should be involved in the selection of indicators.*

B. Recommendations:

In order to benefit from more than nine years experience of establishing and operating Urban Observatories in KSA for the Urban Observatory of Medina. The research recommends the following:

The continuous monitoring of urban indicators of Medina during the last nine years, and measuring the development in urban indicators, which resulted from the successes achieved by the departments, that concerned in implementing the regional and urban plans, and its concern in achieving and spreading development in various parts of the region.

Taking into consideration the especial conditions for local and global competitions. Some urban indicators should be focused on measuring and monitoring urban development.

Sustain the performance of the urban observatory for Medina area in functionally, vitally, effectively continuous manner. By support and develop the specialized human capabilities of national manpower and build the capacity of the Saudi teams to operate the urban observatory network. The main tasks of developing and modernizing the urban observatory shall be carried out by a national consultant.

Sustain technical support for the urban observatory production and output operations. UNDP's contribution is to improve the quality of the work in the observatory by guide the work of the Observatory to meet the objectives of sustainable development.

Working to increase the integration of all urban development partners in the process of building and updating urban indicators, and developing them through building and establishing effective partnership between the concerned governmental bodies such as (Urban Observatory of Medina, Medina Municipality, ...) Indicators. And prioritization of the development agenda through the monitoring network, thus feed the decision-making process.

Using of information industry in linking the urban observatory with governmental sectors and nongovernmental organization, to improve it, which can be achieved by smart phones and sensors and linking between governmental sectors and decision makers with urban observatory. That will make the vision more clear and acquirable for improve decision tacked.

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