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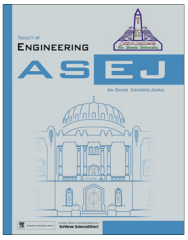

ARCHITECTURAL ENGINEERING

Small-size urban settlements: Proposed approach for managing urban future in developing countries of increasing technological capabilities, the case of Egypt

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Abstract Because of rapid urban concentration in large cities in developing countries, especially in Egypt where about half of the country's urban population is concentrated in two cities, and because of the mounting problems associated with this phenomenon, the research argues that small-size settlements could be an appropriate approach for managing the urban future in developing countries. This argument is based on the idea that recent and expected technological achievements would facilitate the adoption of such approach. In validating this argument, the paper started by an analysis of the main advantages of small-size settlements and the expected impacts of technology on settlement size. Then, the paper examined the rationale of this argument in three steps. First, the paper statistically examined the main differences of settlement size in developed and developing countries, as groups of different technology status levels. Second, the paper has examined the increasing technological capabilities of Egypt, as well as the main urban problems of the country. Third, the paper presents the results of a forecasting survey of technology and urban development experts' opinions and expectations about the suitability and applicability of the proposed small-size settlement approach for developing countries of increasing technological capabilities, such as Egypt. Through these stages, the paper came to confirm the suitability of such approach for these countries, and finally presents some recommendations for the adoption of small-size settlements approach in Egypt.

1. Introduction

Settlement size is one of the main factors that are responsible for settlement success in achieving its development objectives. It is highly interlinked with settlement function and location; and all are dependent on the socio-economic conditions of the society. These conditions were rapidly

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changing over the last century; and technology has been viewed as the main driving force behind that rapid change.

In discussing the appropriate size of urban settlements, there is a growing consensus among urban experts that technology advancements, especially transportation and telecommunication technologies, would have a considerable impact on the future size of urban settlement in developing counties, especially those of increasing technological capabilities [1–3]. Egypt is seen by numerous studies as of increasing technological capabilities (see Section 4.1). Also, the United Nations Human Development Report 2001 classified Egypt as a dynamic adaptor of technological achievements.

The main argument of this paper is that small-size settlement could be an appropriate approach for managing the urban future in developing countries of increasing technological capabilities. This argument is based on the idea that recent and expected technological achievements would facilitate the adoption of such approach. In validating this argument, the paper must provide rational answers for three important questions: (1) what are the main qualities of small-size settlements that make them advantageous for developing countries, (2) how technology affects, and expected to affect, settlement-size? And would that effect reach developing countries?, and (3) would that approach be effective in managing the urban future in developing countries of increasing technological capabilities such as Egypt?

To answer the first question, the paper started by a qualitative analysis of the main advantages of small-size settlements and the declining attractiveness of large urban settlements (Section 2). For the second question, the paper qualitatively reviewed the recent literature about the possible impacts of technology affects settlement-size (Section 3.1); and then the paper quantitatively examined the main differences of settlement size in developed and developing countries, as groups of different technology status levels (Section 3.2). For the third question, the paper has quantitatively examined the increasing technological capabilities of Egypt (Section 4.1), as well as the main urban problems of the country (Section 4.2) and the expected advantages for Egypt of adopting such approach. Then, the paper presents the results of a forecasting survey of technology and urban development' experts opinions and expectations about the suitability and applicability of the proposed small-size settlement approach for developing countries of increasing technological capabilities, such as Egypt (Section 5). In answering these questions, the research adopted a deductive research methodology, and used both qualitative and quantitative research approaches.

2. Why small-size urban settlements?

In 2011, over half the world's urban population and a quarter of its total population lived in urban centres of less than half a million inhabitants. In 2010, about three-fifths of urban population of Africa, the Caribbean and South-eastern Asia were in urban centres with less than half a million inhabitants [4]. This is despite the fact that in many nations, there is an underestimation of the proportion of the population living in urban areas, especially in small centres, as they adopt higher population thresholds for considering settlements as urban[1]. This high percentage of population living in small settlements in almost all countries proves that this size-category of settlements have some qualities that enabled them to attract and sustain this huge number of population worldwide.

2.1. Small-size cities: internal and extended benefits

Constantinos Doxiadis, who predicted in 1965 the emergence of the 'Ecumenopolis'[2] in the second part of the 21st century, has stressed the values that small cities have for their own inhabitants, for those in big cities, and for the world population and civilisation [5]. Regarding their values for their own inhabitants, he argued that if they provide shelter, employment and community life of a quality that is not available in big cities, then they do have a great value for their inhabitants. Concerning their value for the population of big cities, he argues that this is due not only to the services they provide to big cities, especially as centres of primary production, but also due to the fact that small cities preserve human values which are gradually being lost within big cities. Finally, and concerning their value for the entire population and civilisation, he argues that this is due to the fact that we all depend on a complicated system of enormous number of human settlements, ranging from the largest to the smallest ones, and it is not possible to allow any part of that system to disintegrate without endangering our possibilities for survival. Moreover, he posed an important question: how do we know that big cities can survive without the small ones? and argued that this has never happened before and that we are not allowed to let it happen without being aware of its repercussions to our welfare [5,6].

In addition, Dix [7] argues that the main advantage of small cities lies in the possibility of developing in them a sense of identity, a feeling of belonging and participation among residents, a corporate spirit and outlook covering the whole population [7]. Such qualities may make government easier and encourage civic development initiatives. On the other hand, he forewarns that if these small settlements grow too quickly they can easily suffer many of the disadvantages of metropolises without ever enjoying their advantages.

These arguments coincide with the ideas of Constantinos Doxiadis that stress the necessity to give back, to the existing small cities, and develop, in the new ones, the original and fundamental qualities of small cities [5]. To achieve these qualities, he recommends some important actions that can be summarised in the following three points. First, we must give back to small cities the human scale which they are tending to lose

[1] For example, by 1996, 17.5% of Egypt's total population lived in settlements of between 10,000 and 20,000 inhabitants that had many urban characteristics, including significant non-agricultural economies and occupational structures. These settlements are not classified as urban areas [4–8]. If Egypt adopted the Indian definition of urban settlements (as communities of more than 5000 inhabitants), around 80% of Egypt's population would be urban or, and if adopted the Philippines definition, 100% would be urban [6].

[2] Ecumenopolis is the Universal City that is predicted by Constantinos Doxiadis to emerge as dynamic cities that gradually going to be interconnected into a continuous network of built-up areas which in the second half of the 21st century is expected to cover the entire earth with a net-like city having a probable population of about 10–30 billion people.

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