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Title of Thesis: Modeling Factors affecting Property/ Land Uses Values in GIS & Space Syntax

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Department: Architectural Engineering Department **Approval:-----**

ABSTRACT

Nowadays, the world is passing through a massive and huge transformation phase in the fields of urbanism and planning. Most cities all over the world are witnessing a huge growth in population which makes planners suffer from the complexity of all domains and components of urban growth including population densities, services and mobility network systems. Any city is composed of various elements which form it. Streets, Blocks and Open spaces are considered the main foundations of the city's structure. Every good city has its defining structure and soul which differentiates it and makes it unique. Cities' identities reflect back on the structural layout and its open & closed spaces accordingly.

Over time, many attempts are being done to achieve an assessment of property/ land economic value. The problem is resulted due to several factors. Firstly, there is more than one factor affecting assessment and that some are tangible, changing and differ upon place and time, but others are not. Secondly, residential apartments are subjected completely to the market and its sellers. Thirdly, absence of computerized and digital markets database impedes the process of properties assessment over time. Using databases and digital data makes it easier to have a base map and analyze the factors more accurately. By defining the factors affecting the value such as: distance from a main road, distance from the nearest supermarket, street frontage, distance to city center etc., each factor's value can be determined.

The research aims to study the factors affecting the value of any property and decompose them into factors to be measured. It is considered as a first step in generating an equation for valuing residential properties. Objectives can be listed as follows: Studying the impact of streets network on properties value, concluding an equation for the value of residential properties in an urban non-



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rural area & to compare the magnitude of influence between different factors affecting property value of residential buildings.

This study adopts a quantitative approach that involves mathematical and digital methods of property evaluation which involve various factors. This approach gives the most approximated value of each factor influencing the value of a building thus the value of property. The tool used in research is Space Syntax for analyzing the spatial layout. The research project applies the method of segment angular integration analysis for the city pattern of streets. Regression Analysis is used for comparing influence of factors affecting property value.
