



## A VALUE ASSESSMENT MODEL FOR SUSTAINABLE SMART CITIES

**June Wei, College of Business, University of West Florida, Florida, USA**  
**Email: [jwei@uwf.edu](mailto:jwei@uwf.edu)**

### ABSTRACT

*A smart city applies information and communication technologies (ICTs) to planning, designing, building, and operating city infrastructures in order to improve life quality and economy. It covers many aspects in a city such as utility, public transportation, education, healthcare, entertainment, and city governances via using ICTs. Benefits that a smart city can offer include resource optimization on identification of mismanagement, quick disaster recovery and fast emergency responses via real-time data evaluation, better service quality to citizens and organizations, and efficient city administration.*

*Motivated by the apparent lack of literatures in the area of an exploratory study on value assessment in building smart cities, this paper aims at developing a value assessment model for smart cities (VAMSC) based on value theory. Specifically, it first developed a theoretical model for assessing smart cities value based on value theory and mean-end analysis method, which includes means and fundamental value objectives. The means objectives are developed based on a strategic value assessment model and the fundamental objectives are based on an engagement assessment model. This assessment model includes four levels: Level 1 - smart information and communication infrastructure (objectives in Privacy, Security, Social Networking, and Technology such as Internet of Things, RFID, and Cloud Computing); Level 2 - smart organization infrastructure (objectives in Education, Transportation, Utility & Sanitation, Healthcare, and Social & Entertainment); Level 3 - smart governmental infrastructure (objectives in Economy, Legal & Law, and Policy & Regulation); and Level 4 - smart environmental infrastructure (objectives in Green Environment and Social Harmony).*

*Second, a survey is developed to measure these mean and fundamental objectives. Data was collected from 283 subjects using the stratified sampling method. Multivariate statistical analysis such as factor analysis was used to analyze data. The findings show that a 6-factor instrument that measures means objectives and 4-factor measures fundamental objectives. Third, a relative-weighted assessment method was proposed to assess the value level of smart cities based on the results derived from data analysis. Finally, recommendations and guidelines are presented to assist city administrators and decision making for building and operating a smart city. The results of this research will provide strategies on how to transform cities into smart cities by accelerating the adoption of smart technologies and smart systems. The paper also will assist city administrators and top level managers when they make decisions on building a smart city and to improve people's living quality in a city. Managerial and practical implications are also presented.*



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*One limitation of this research is that subjects were recruited from one country. With the advanced ICTs, a smart city moves to globalization to deliver high quality services to citizens and organizations. A smart city across countries based on global ICTs creates an even high level of value. The future research will develop a cross-cultural value assessment system for building and operating cross-cultural smart cities for global users by considering risks inherited from cultural differences.*