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Novel Decision Support Systems: Design and Assessment

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ABSTRACT

This dissertation consists of three essays that propose designs and theoretically-based evaluations of two novel decision support systems (DSS): a web-based spatial DSS (SDSS), a dialectic DSS (DDSS), and a comparative analysis of subjective and objective measures of system success in terms of decision process and outcome. In the first essay, a web-based SDSS that utilizes the latest advances in web-based geographic information systems (GIS) is designed and developed to support decision makers for making spatial decisions. Task-technology, goal setting, and self-efficacy theories are synthesized to develop a conceptual model to explore the perceptual factors impacting the perceived performance of web-based SDSS. Building on the first essay's theoretical model, a conceptual model for the second essay is developed for evaluating the efficacy of the proposed web-based DDSS that embeds a dialectic technique for unstructured problems, in order to elicit the underlying assumptions in the decision process. The third essay uses the research data from the prior essays to examine whether there is a discrepancy between subjective measures and objective measures of information-system success factors in the context of SDSS and DDSS. Together, these three essays extend the field by adding spatial and critical-thinking dimensions to the existing DSS and may provide a deeper understanding of perceptual and objective success measures for such systems.