ABSTRACT

Due to the strategic impact of a facility location decision, a location search requires thorough analysis of numerous location factors. The difficulties in multi-factor analysis of location decisions have been challenged by many location researchers. This dissertation investigates the design and implementation of a geographic information system-based decision support system (GISDSS) in the facility location domain. The GISDSS for locating a manufacturing facility is intended to assist facilities planners in improving the quality of strategic decision-making in facility location.

A review of past location studies was conducted to identify the major considerations for locating a facility and to develop a taxonomy of location factors for Thailand. The GISDSS incorporates a chromatic representation location model and vastly accepted location factors. A geographic information system (GIS) is used with the location model to manipulate data, and identify suitable sites. The recommendation on the best location is furnished to a user through a Visual Basic-based interactive graphical user interface. The GISDSS for facility location provides users with location recommendations in both a graphical format, illustrated by the color displays; and a numerical format, quantitatively stated by the color equation. The

system also makes transparent its recommendations via explanation reports.

